DELAWARE 2019 TOXICS RELEASE INVENTORY REPORT

Prepared by the EPCRA Reporting Program
Department of Natural Resources and Environmental Control

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John Carney
Governor

Shawn M. Garvin
Secretary, DNREC

This report was prepared with the assistance of numerous individuals in the Department of Natural Resources and Environmental Control. Any questions or comments regarding this report should be directed to the principal author:

Debra Nielsen
TRI Coordinator
EPCRA Reporting Program, DNREC
155 Commerce Way, Suite B
Dover, DE 19904
Tel. (302) 739-9405
e-mail: debra.nielsen@delaware.gov

DNREC MISSION STATEMENT

The mission of the Department of Natural Resources and Environmental Control is to ensure the wise management, conservation, and enhancement of the State's natural resources, protect public health and the environment, provide quality outdoor recreation, improve the quality of life, and educate the public on historic, cultural, and natural resource use, requirements and issues.

TABLE OF CONTENTS

Executive Summary 1

Introduction

What is the Toxics Release Inventory? 2
Reporting Requirements 3
Limitations of TRI Data 4
Recent Developments in TRI Reporting 5

2019 Data Summary

Data Summary 6
Types of Data 6
On-Site Releases
- Releases to Air 8
- Releases to Water 9
- Releases to Land 10

Off-Site Transfers 11
On-Site Waste Management 12
Total Waste 13

2019 Data Detail

On-Site Releases by County 14
Facility Map 15
NAICS Industry Groups 17
Releases From Top 15 Facilities 18
Facilities No Longer Reporting to TRI 20
Persistent Bioaccumulative Toxic (PBT) Chemicals 2009-2019 21
- Dioxin and Dioxin-Like Compounds. 23
- Mercury and Mercury Compounds 24

Carcinogenic TRI Chemicals 26
Carcinogen Trends, 2009-2019 26
Trend Analysis, Effect of Chemical and Facility Group Additions, 1990-2019 30
Release and Waste Management Trends, 2009-2019
- On-Site Releases, 2009-2019 33
- Off-Site Transfers, 2009-2019 36
- On-Site Waste Management, 2009-2019 38

Receiving TRI Chemicals in Wastes 40
Pollution Prevention Programs in Delaware 41
National Perspective 42
Nearby Facilities in Adjacent States 44
TRI and the Economy 47

For Further Information 48

TABLE OF CONTENTS, Continued

Appendices

Appendix A - What is Community Right-to-Know?
Appendix B - 2019 Facility Contacts
Appendix C - 2019 On-Site Releases by Facility and Chemical
Appendix D - 2019 Off-Site Transfers and Waste Managed On-Site by Facility
Appendix E - 2019 On-Site Release Summary by Facility (Ranked by Total On-Site Release)
Appendix F - 2019 On-Site Releases by Chemical and Facility
Appendix G - 2019 Off-Site Transfers and Waste Managed On-Site by Chemical
Appendix H - 2019 On-Site Release Summary by Chemical (Ranked by On-Site Release)
Appendix I - 2019 PBT Release and Transfer Detail (Alphabetical by Chemical)
Appendix J - 2019 Carcinogen Release Detail (Alphabetical by Chemical)
Appendix K - TRI Reporting Form R
Appendix L - TRI Reporting Form A
Appendix M - TRI Reporting Forms Dioxin Schedule 1

Tables

Table 1: Covered Industries 3
Table 2: 2019 TRI Data Summary 6
Table 3: TRI Chemicals Released to Water by Water Body in 2019. 9
Table 4: TRI Chemicals Released to Water by Basin 10
Table 5: 2019 TRI Data by Primary NAICS Group 17
Table 6: Top 15 Facilities - 2018 and 2019 Ranking by On-Site Release 19
Table 7: 2019 Delaware PBT Chemicals and Reporting Thresholds 21
Table 8: 2019 TRI PBT Data Summary 22
Table 9: 2019 TRI PBT Release by Chemical 23
Table 10: Carcinogens Reported by Delaware Facilities for 2019 26
Table 11: 2009-2019 TRI Carcinogens, On-Site Releases 27
Table 12: Trend of On-Site Releases For Chemical and Facility Additions 31
Table 13: 2009-2019 TRI Data Summary 32
Table 14: Reports of Major Changes in On-Site Releases For 2019. 34
Table 15: Major Changes in Off-Site Transfers for 2019. 37
Table 16: Major Changes in On-Site Waste Management for 2019 39
Table 17: Summary of Transfers to Delaware Facilities From Other TRI Facilities in 2019 40
Table 18: Ranking of On-Site Releases for Select States. 42
Table 19: Select Facility Total On-Site Releases Compared to Delaware 43
Table 20: Comparison of Dioxin Totals For Select Facilities to Delaware Total 43
Table 21: Comparison of Mercury Totals For Select Facilities to Delaware Total 44
Table 22: Comparison of Total Waste for Select Facilities to Delaware Total 44
Table 23: On-Site Releases From Nearby Facilities in Adjacent States 45

TABLE OF CONTENTS, Continued

Figures

Figure 1: 2019 On-Site Releases 8
Figure 2: Top 15 Chemicals Released to Air 8
Figure 3: Top 13 Chemicals Released to Water 9
Figure 4: Top 7 Chemicals Released to Land 10
Figure 5: 2019 Off-Site Transfers 11
Figure 6: 2019 On-Site Waste Management 12
Figure 7: Total 2019 TRI Chemical Management 13
Figure 8: TRI On-Site Releases Reported by County 14
Figure 9: Top 5 NAICS Industries for 2019, Percent On-site Release 17
Figure 10: On-Site Releases to Media, Top 5 Industry Segments 18
Figure 11: 2019 On-Site Releases, Top 15 Facilities 18
Figure 12: Top 15 Facilities On-Site Release 19
Figure 13: Trend of Dioxin On-site Releases 2009-2019 23
Figure 14: Delaware Mercury Trends, On-Site Release, All Facilities 24
Figure 15: 2019 On-Site Mercury Releases From Delaware Facilities 25
Figure 16: Releases to Air, Water, and Land, All TRI Carcinogens, 2009-2019 27
Figure 17: Total TRI Carcinogen On-Site Release, 2009-2019 28
Figure 18: Effect of Chemical and Facility Group Additions, 1990-2019 31
Figure 19: Trend of Delaware TRI On-Site Releases, 2009-2019 33
Figure 20: On-Site Release Trend, Top 5 TRI chemicals, 2009-2019 34
Figure 21: Trend of TRI On-site Releases 2015-2019 35
Figure 22: Trend of Delaware On-site Releases without Delaware City Refinery 2015-2019 35
Figure 23: Off-Site Transfers, 2009-2019 36
Figure 24: Off-Site Transfers, 2009-2019 36
Figure 25: On-Site Waste Management, 2009-2019 38
Figure 26: Total TRI On-Site Release Trends, Delaware and Nearby States 43
Figure 27: Facilities in Nearby States 46
Figure 28: 2019 Production Index Distribution 47

Executive Summary

For 2019, 59 facilities submitted reports for 82 different chemicals. Approximately 6 million pounds were reported as being released onsite. Onsite releases of carcinogens decreased by 49% compared to 2018. Total onsite releases decreased by 245,000 pounds or 4% compared to 2018. Of this amount, approximately 7,000 pounds were released to land, while 522,000 pounds were released to air, and approximately 5.4 million pounds were released to water.

Onsite Releases

- **Of Carcinogens:** The total amount for onsite releases of carcinogens decreased by 38,000 pounds (49%) for 2019.
    - This was largely due to a 23,000 pound decrease in releases of vinyl chloride (a known carcinogen), and a 15,000 pound decrease in releases of vinyl acetate (a possible carcinogen) by Formosa Plastics; both as a result of the 2018 shutdown of this facility.
    - The largest release amount in this category was 11,000 pounds of styrene, a possible carcinogen, all reported by Justin Tanks.
- **Of PBT's:** The total amount for onsite releases of persistent bioaccumulative toxins (PBTs) decreased by 3,000 pounds (33%) for 2019. Since 2009, total onsite releases of chemicals in this category have decreased by 71%: dioxins by 94%, lead and lead compounds by 71%, and mercury and mercury compounds by 48%.
    - The greatest decrease in this category for 2019 was a 2,800-pound decrease of lead releases to land reported by the U. S. Army's National Guard River Road Training Site Range in New Castle.
    - Releases of lead were also the largest amount reported in the PBT category, with almost all of the 5,100 pounds released reported by the National Guard Training Site Range.
- **To Land:** The total amount released onsite to land decreased by 7,500 pounds (53%) compared to 2018.
    - The greatest decrease in this category for 2019 was a 2,800-pound decrease of lead releases to land reported by the U. S. Army's National Guard River Road Training Site Range in New Castle.
    - Lead was the top substance reported as release to land, with almost all of the 5,100 pounds being released by the National Guard Training Site Range.
- **To Air:** The total amount of TRI chemicals reported as released onsite to air for 2019 decreased by 218,000 pounds (30%), compared to 2018.
    - Decreases in releases to air were reported by several facilities, with the largest being decreased sulfuric acid aerosol releases to air by PBF Energy's Delaware City Refinery, down 175,000 pounds compared to 2018. When a sulfur-bearing fuel such as refinery fuel gas is burned, the sulfur is initially converted to sulfur dioxide (SO2). Under certain conditions, a small portion of the SO_2 can form sulfuric acid aerosol. Decreased releases are due to many factors, but are primarily due to lower sulfur content in crude stock.
    - Hydrogen cyanide was the top substance reported as released to air at 130,000 pounds, with all of it being released by the Delaware City Refinery.
- **To Water:** The total amount released onsite to water decreased by 19,000 pounds (0.4%) compared to 2018.

- The decrease in releases to water was a result of PBF Energy's Delaware City Refinery's 127,000 pound decrease in releases of nitrates to water. In 2019, the Refinery's nitrate releases to water were within the limits of the company's permit with DNREC.
- Nitrate compounds were the top substance reported as released to water at 5.4 million pounds, with 5 million pounds (92%) released by the Delaware City Refinery and 249,000 (6.4%) released by Perdue Farms Georgetown.

Offsite Transfers

- Transfers offsite decreased 29%, primarily the result of decreases in offsite recycling. Offsite transfers are transfers of material to offsite locations (permitted waste treatment or water treatment facilities) for the purpose of disposal, recycling, energy recovery, or treatment.
- **Largest Change:** The largest decrease reported was for offsite recycling of lead compounds by the Clarios (formerly Johnson Controls) Battery Plant, down 2.8 million pounds since 2018, due to the 2019 shutdown of this facility.
- **Largest Chemical Reported:** Lead compounds were the largest reported chemical amount transferred for offsite recycling at 3.84 million pounds, with 2.46 million pounds reported by the Clarios (formerly Johnson Controls) Distribution Center, and 1.38 million pounds reported by the Clarios Battery Plant, with both facilities located in Middletown.

Onsite Management

- Waste managed onsite decreased by 22.3%, due mostly to decreases in onsite treatment.
- **Largest Change:** The largest decrease reported was for onsite treatment of hydrogen sulfide by PBF Energy's Delaware City Refinery, with a decrease of 103.3 million pounds compared to 2018.
- **Largest Chemical Reported:** Hydrogen sulfide was also the largest reported chemical amount managed onsite, with 343.4 million pounds being treated onsite, with a majority of that amount being reported by the Delaware City Refinery. Hydrogen sulfide gas is produced during the petroleum refining process, and is then treated onsite and converted to elemental sulfur, a material that is sold for agricultural and chemical manufacturing uses.

What is the Toxics Release Inventory?

The Toxics Release Inventory, or TRI, is a publicly available data set containing information reported annually for toxic chemicals manufactured, processed, or otherwise used by certain facilities in Delaware and throughout the United States. Each year, these facilities report releases and waste management information for covered chemicals. The reportable list of toxic chemicals for 2019 included 595 individual chemicals and 34 chemical categories. October of 2019 marked the 33rd anniversary of the establishment of TRI under Title III, Section 313, of the 1986 Federal Superfund Amendments and Reauthorization Act (SARA 313). The purpose of TRI is to provide information to the public about the presence and release of toxic chemicals in their communities. Title III is also known as the Emergency Planning and Community Right-to-Know Act (EPCRA). See **Appendix A** for more information.

Covered facilities report TRI information to the EPA and to the state in which the facility is located. In Delaware, the EPCRA Reporting Program within the Department of Natural Resources and Environmental Control (DNREC) receives and compiles TRI data from facilities

located within the State. The DNREC EPCRA Reporting Program maintains a TRI database that is updated as new reports and revisions to old reports are received. The database currently contains 33 years of reported data. Most releases reported under TRI are also regulated through Federal and/or State permits.

This report contains detail from every 2019 TRI report or report revision from Delaware facilities received by DNREC as of October 1, 2020. Facilities must submit these reports to DNREC and the EPA by July 1 of each year. Several types of analyses are presented in this report based on this data and data from prior years. See **Access to TRI Files, under For Further Information,** on page 48 for details.

Reporting Requirements

A facility is required to submit a report for a listed toxic chemical if the facility meets all of the following criteria:

1. Employs the equivalent of 10 or more full-time employees,
2. Is a covered industry, or is a Federal facility (See Table 1 below for a list of reporting industries), and,
3. Manufactures or processes more than 25,000 pounds, or otherwise uses more than 10,000 pounds, of the listed toxic chemical during the course of the calendar year. Threshold limits for specific chemicals known as PBTs (Persistent Bioaccumulative Toxics) are lower (see Table 7 on page 21).

Note that from time to time, the EPA proposes changes in reporting requirements. It gives agencies, reporting facilities, and other interested parties time to comment on these changes prior to making a final decision about the proposed change. See page 5 for more details.

Facilities that meet the criteria for reporting must submit one report for each listed toxic chemical if it was manufactured, processed, or otherwise used above threshold quantities. The reports cover releases and waste management activities during the prior calendar year.

It is important to note that a facility may need to report even if it has no releases of toxic chemicals, because reporting is based on the amount manufactured, processed, or otherwise used, and not the amount released.

The standard Form R report (see **Appendix K** for Form R) contains general facility information and complete data about on-site releases, off-site transfers, and on-site waste management activities. Form R can be used for all TRI reports. In lieu of Form R, the optional short Form A report (see **Appendix L** for Form A) may be used provided certain criteria are met. Form A, initiated in the 1997 reporting year, is a two-page report that provides facility information (essentially the same as Form R) and identification of the chemical, but does not provide any release, transfer, or waste management data. In Delaware, 13% of the TRI reports were filed as Form A for 2019. After a facility determines that it must report on a given chemical, the facility is eligible to use Form A if:

For non-PBT chemicals:

1. The total annual reportable amount (including the sum of on and off-site releases, disposal, treatment, recovery for recycle or energy) is less than 500 pounds; and,
2. The total annual amount of the chemical manufactured, processed, or otherwise used does not exceed 1,000,000 pounds.

For Persistent Bioaccumulative Toxic (PBT) Chemicals including dioxins:

1. **PBTs, including dioxins and dioxin-like compounds, may not be reported on Form A.**

2. Form R, Schedule 1 is an additional form that is required for dioxins.

Because of the lack of data in the Form A reports, DNREC has been collaborating with the reporting facilities and emphasizing the importance of reporting on Form R.

TABLE 1
NAICS COVERED INDUSTRIES

NAICS CODES	2018 INDUSTRY
212	Mining
221	Utilities
311	Food Manufacturing
313	Textile Products Mfg.
324	Petroleum and Coal Products Mfg.
325	Chemical Manufacturing
326	Plastics and Rubber Manufacturing
327	Non-metallic Mineral Product Mfg.
331	Primary Metal Manufacturing
332	Fabricated Metal Product Mfg.
333	Equipment Mfg.
335	Electrical Equipment Mfg.
339	Misc. Manufacturing
454	Non-Store Retailers
928	National Security

Table 1 is a list of covered industries reporting to the Delaware TRI program for 2019, along with the corresponding three primary digits of the North American Industrial Classification System (NAICS) Codes. NAICS 6-digit codes are used to identify the type of activities performed at a facility. Each industry sector represented by facilities reporting in Delaware for 2019 is shown in Table 5 on page 17. NAICS codes were used in TRI starting in 2006 to provide more discrimination between the various industry sectors reporting to TRI versus the previously used SIC codes. The EPA updated the NAICS codes used for TRI reporting from the 2012 to the 2017 standard, starting with the 2017 report year.

Limitations of TRI Data

The user of TRI data should be aware of its limitations in order to interpret its significance accurately.

- **NOT ALL FACILITIES ARE REQUIRED TO REPORT.** A relatively small number of facilities in Delaware are required to report under TRI, based on the criteria listed on page 3 and above. TRI facilities are primarily industrial/manufacturing facilities and facilities report releases and other waste management activity to TRI. TRI does not account for amounts of hazardous material stored at facilities. The DNREC program addressing inventories of material stored on site, the Hazardous Chemical Reporting program known as “Tier II” (also administered under EPCRA), includes a much greater number of facilities. Facilities report amounts and the location of chemicals stored on-site to Tier II, but not releases. For further information, see ***Hazardous Chemical Reporting in Appendix A.***

- **OTHER SOURCES NOT COVERED UNDER TRI ALSO RELEASE TOXIC CHEMICALS.** Other significant sources of pollution include small businesses, motor vehicles and agricultural operations. For example, on-road motor vehicles released an estimated 5,709 tons to air in Delaware just for the chemicals ammonia (NH_3) and volatile organic compounds (VOCs), for 2016. NH_3 and many VOCs are also TRI chemicals. See page 6, which shows that total TRI on-site releases for 2019 are 5,924,712 pounds, or 2,962 tons.

- **FACILITIES ARE REQUIRED TO BASE TRI DATA ON MEASUREMENTS AND MONITORED DATA ONLY IF THESE ARE AVAILABLE AT THE FACILITY.** If such data is not available, quantities may be estimated based on published emission factors, mass

balance calculations, or good engineering judgment. Additional monitoring equipment and measurements are not required. For 2019, 9% of the reports representing 8% of reported on-site release amounts were estimated using monitoring data, with the balance being split between emission factors, mass balance calculations, and other methods.

- **THE DATA ESTIMATION METHODS MAY CHANGE OR VARY.** The methods of estimating or basis of calculating data used by different facilities, or even the same facility over time, may vary, and may result in significant changes in reporting while the actual release may remain relatively unchanged. DNREC performs cross-checks of the data with other information sources to verify its accuracy and contacts facilities concerning apparent discrepancies.

- **FACILITIES MAY REVISE FORM R DATA AT ANY TIME.** These revisions sometimes involve significant changes for data previously reported by the facility.

- **THE DATA DOES NOT INDICATE THE AMOUNT OF HUMAN EXPOSURE.** An important consideration to keep in mind is that TRI does not provide an indication of potential exposure to the reported releases and cannot be used by itself to determine the impact on public health. The chemical's release rate, toxicity, and environmental fate, as well as local weather and wind direction and the proximity of nearby communities to the release must be considered when assessing exposures. Small releases of highly toxic chemicals may pose greater risks than large releases of less toxic chemicals. The potential for exposure increases the longer the chemical remains unchanged in the environment. Some chemicals may quickly break down into less toxic forms, while others may accumulate in the environment, becoming a potential source of long-term exposure. The chemical exposure of a population depends on the environmental media (air, water, land) into which the chemical is released. The media also affect the type of exposure possible, such as inhalation, dermal exposure, or ingestion.

Despite these limitations, TRI serves as a valuable screening tool to identify areas of concern that may require further investigation.

Recent Developments in TRI Reporting

The TRI reporting requirements change as the EPA seeks to improve the program through changes to the list of reportable chemicals and through program expansions. Because of these changes, considerable caution must be exercised when comparing TRI data from previous years. Notations will be made to indicate which data is presented with adjustments in order to show it on a uniform year-to-year basis.

The EPA added a nonylphenol ethoxylates (NPE's) category in June, 2018. Reports for the chemicals in this category were required starting with the 2019 TRI reporting year, if TRI chemical use and other thresholds are met.

The EPA added a new category for per- and polyfluoroalkyl substances (PFAs) to the list of TRI reportable chemicals for the 2020 TRI reporting year. Reports for the chemicals in this category are due July 1, 2021, if TRI chemical use and other thresholds are met.

2019 Data Summary

Delaware 2019 and 2018 TRI totals for on-site releases, off-site transfers, and wastes managed on-site are displayed in Table 2 for direct comparisons. For 2019, 59 facilities submitted 187 reports for 82 different chemicals. Total on-site releases decreased by 4% (245,080 pounds). This decrease was primarily driven by decreases in sulfuric acid released to air and nitrate compounds released to water reported by the Delaware City Refinery. Off-site transfers were down 30%, with decreases in off-site recycling, off-site energy recovery, and transfers to Publicly Owned Treatment Works (POTW's); partially offset by increases in off-site treatment and off-site disposal. On-site waste management decreased by 22.3% compared to 2018. There were large decreases in on-site treatment, and smaller decreases in on-site recycling and energy recovery.

TABLE 2
2019 TRI DATA SUMMARY
(IN POUNDS)

	2018	2019
No. of Facilities	60	59
No of Form As	29	24
No of Form Rs	166	163
No. of Chemicals	84	82
On-site Releases		
Air	739,722	521,593
Water	5,416,033	5,396,564
Land	14,037	6,555
Total On-Site Releases	6,169,792	5,924,712
Off-Site Transfers		
POTW's	940,287	835,843
Recycle	9,126,594	5,922,986
Energy Recovery	1,210,933	902,596
Treatment	190,320	288,272
Disposal	187,375	214,772
Total Off-Site Transfers	11,655,509	8,164,469
On-Site Waste Mgmt.		
Recycle	10,725,721	10,280,608
Energy Recovery	13,854,373	11,693,251
Treatment	471,442,723	363,654,274
Total On-Site Mgmt.	496,022,818	385,628,133
Total Waste	513,848,119	399,717,314

Types of Data

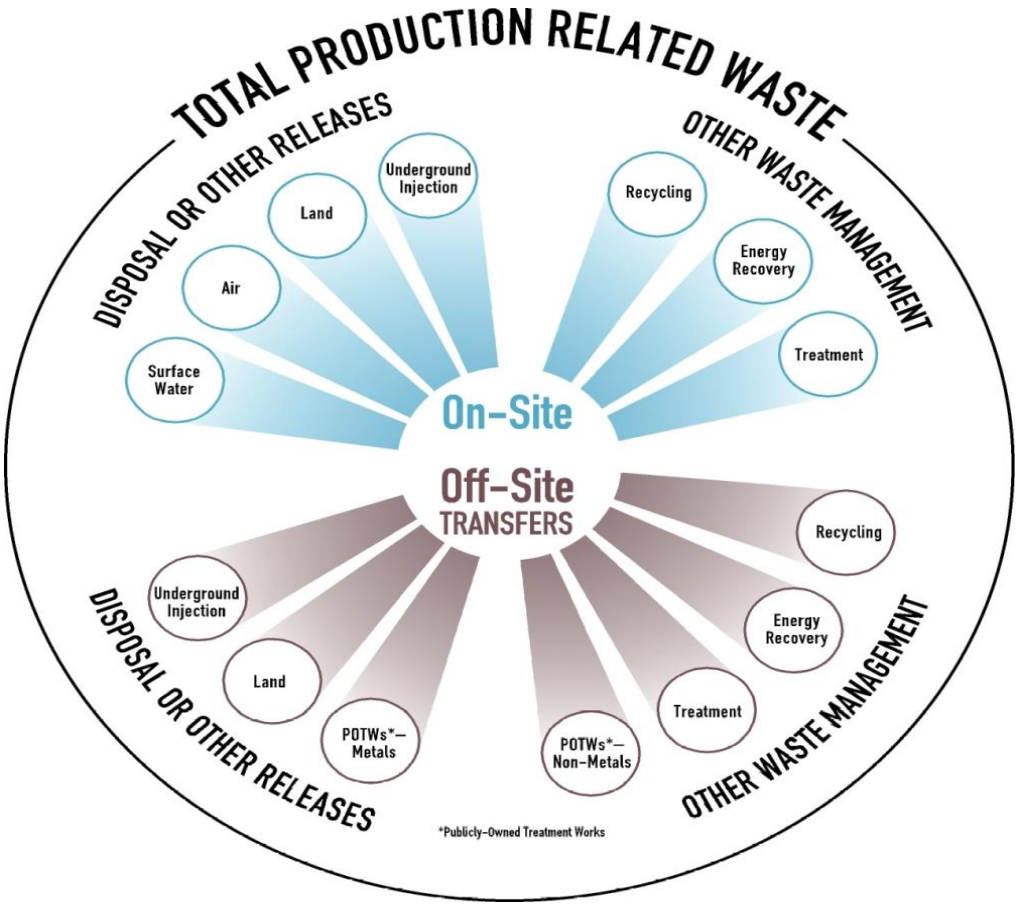
Table 2 lists the categories of data reported to Delaware and the EPA under the TRI program. Within the reports received from facilities, the data is broken down into additional sub-categories. For ease of presentation in this report, the data has been grouped into these categories as described below.

On-Site Releases: On-site releases in Delaware are to **air, water,** or **land**. There are four TRI categories, but one of these, **underground injection** of TRI chemical waste, is not permitted in Delaware. The **release to air** category includes stack releases collected by mechanical means such as vents, ducts, or pipes, and fugitive releases escaping collection, including equipment leaks and evaporation. **Releases to water** are to water bodies, including streams, rivers, lakes, bays, or oceans. This includes releases from contained sources, such as industrial process outflow or open trenches. Releases to water which result from TRI-reportable chemicals in runoff and storm water runoff are also reportable. **Releases to land** are to (1) RCRA (Resource Conservation and Recovery Act) landfills, in which wastes are buried, (2) surface impoundments, which are uncovered holding areas used to volatilize and/or settle waste materials, (3) other land disposal such as waste piles or releases to land such as spills or leaks, (4) land application/treatment in which waste containing a listed chemical is applied to or incorporated into soil, and (5) other non-RCRA landfills.

Off-Site Transfers: Off-site transfers include transfer of chemical waste to **POTWs** (publicly owned treatment works, typically waste water treatment plants), **recycle** operations (five types), **energy recovery** operations (two types), **treatment** operations (six types), and **disposal** (fourteen types). The receiving facilities are separate from the facility generating the waste. These five main categories of off-site transfers cover the types of final off-site management undertaken for each chemical.

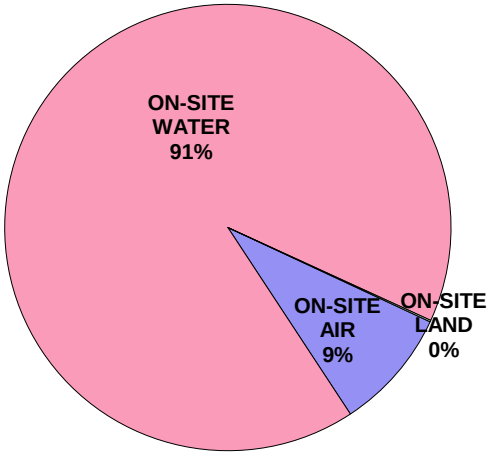
On-Site Waste Management: Waste management operations at the facility generating the waste are categorized to include **recycle**, **energy recovery**, and **treatment.**

The diagram below shows these types of data and how they are related to the four main categories of on- and off-site releases, disposals, and other waste management.



Amounts Reported: The amounts reported are in pounds per year, with a few exceptions, such as dioxins and dioxin like compounds, which are reported in grams. Certain chemical compounds have only the weight of the specific ion or elemental form reported instead of the entire compound, such as nitrate compounds or lead compounds. Also, specific chemicals are only required to be reported in certain states, such as hydrochloric and sulfuric acid, which are only required to be reported as aerosols or gases. For further information on the specific chemical reporting requirements, please refer to the TRI guidance documents at: https://ofmpub.epa.gov/apex/guideme_ext/f?p=104:1.

FIGURE 1
2019 ON-SITE RELEASES



TOTAL REPORTED
5,924,712 POUNDS

On-Site Releases

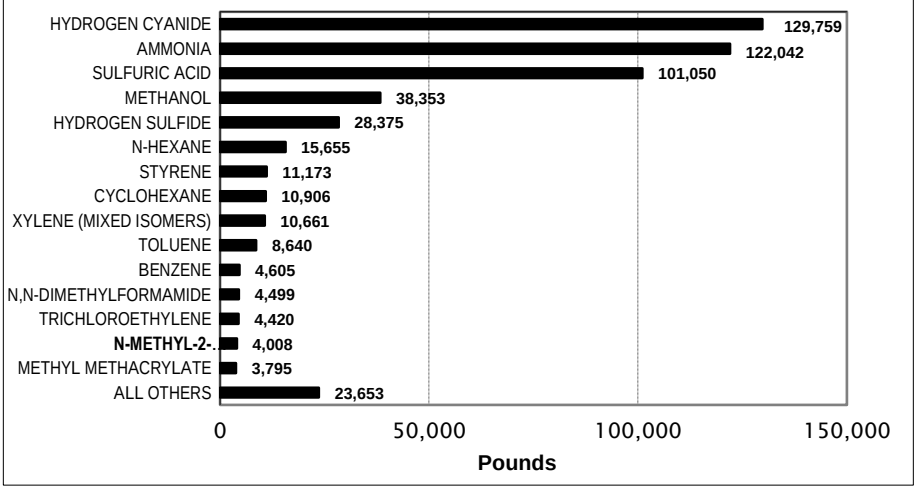
On-site TRI releases are emissions from a facility to the environment, including emissions to the air, discharges to surface water, and disposal onto or into the ground. These on-site releases to air, water, and land reported under TRI for 2019 made up about 1.5% of all TRI-reported waste amounts. The remaining 98.5% of waste is managed on or off-site as shown in the diagram on the previous page and as seen in Figure 7 on page 13.

Figure 1 shows the totals of on-site releases reported in Delaware. A large portion, 91% of the total on-site release, is to water. Additional analysis of on-site releases is presented in Figures 2, 3, and 4, which show the top 15 chemicals released to air, the top 13 released to water, and the 7 chemicals released to land. A trend graph for 2009-2019 for all reported on-site releases is on page 33, and a trend graph for the top five chemicals is on page 34. Additional detail about on-site releases can be found in Appendices C, E, F, and H.

Releases to Air

Figure 2 depicts the on-site releases to air of the top 15 chemicals compared to the other 49 chemicals that were reported as released to air in 2019.

FIGURE 2
TOP 15 CHEMICALS RELEASED TO AIR



The largest air release, hydrogen cyanide accounted for 24.9% of all releases to air, and was reported only by the Delaware City Refinery. The second largest air-release, ammonia (23.4%), can be used as a refrigerant for petrochemical, food processing, and chemical facilities and is also a by-product of air pollution control activities. Seven facilities reported releases of ammonia, with the Delaware City Refinery (55.3% of the total) releasing the largest amount to air, and Mountaire Farms of Delaware (27.7% of the total)

the second largest. The third largest release to air is Sulfuric Acid aerosol (gas) releases, which make up 19.4% of all on-site releases to air, and are released largely in the crude oil refining process by the Delaware City Refinery. Sulfuric acid releases have decreased by 63.4% compared to 2018, largely due to a 175,073 pound (64.1%) decrease in sulfuric acid aerosol releases reported by the Delaware City Refinery. This is due to many factors, with the largest being changes in crude oil. Methanol releases were fourth largest, 7.4% of all releases to air; and were reported by eight facilities with BASF Corp reporting the highest amount, 31,060 pounds, or 81% of the total. Hydrogen sulfide, which accounted for 5.4% of all on-site releases to air, was predominantly released to air by the Delaware City Refinery (81.7%). The sixth largest chemical released to air was N-hexane, which accounted for 3% of all releases to air, with the Delaware City Refinery reporting 80% of the total. The remaining chemicals in Figure 2 were each 2% or less of Delaware's total on-site releases to air.

Releases to Water

Releases to water made up the largest portion of on-site releases at 91%. Table 3 shows the total amount of TRI chemicals released to each water body that received a TRI chemical. Not every report to a water body in Table 3 shows a release quantity. In Delaware, 20 of the 54 reports listing a water body as a possible destination for a release to water did not report any quantities actually released to that water body. These facilities reporting zero for the release amount for a specific chemical met the TRI reporting requirements and did not have an actual release to the body of water, but had the potential of a release.

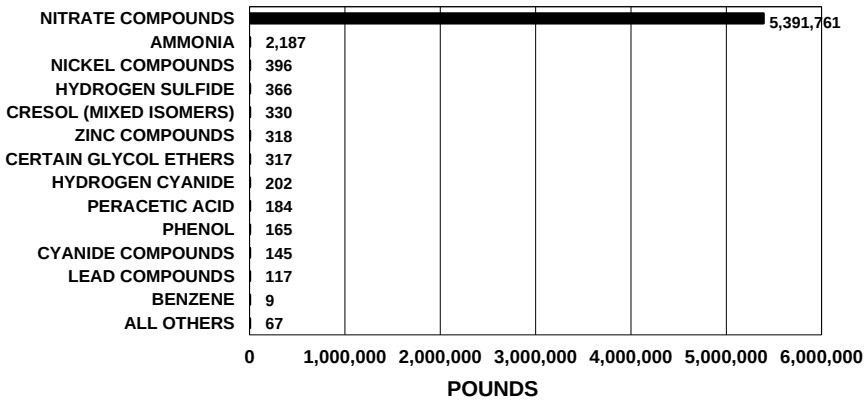
TABLE 3

TRI CHEMICALS RELEASED TO WATER BY WATER BODY IN 2019

WATER BODY	NO. OF FACILITIES	NO. OF REPORTS	**RELEASE** (IN POUNDS)
ARMY CREEK	1	2	**321**
BEAVERDAM CREEK	1	1	**73,217**
CHRISTINA RIVER	1	3	**0**
DEEP CREEK	1	3	**0**
DELAWARE RIVER	3	40	**4,975,746**
DRAWYER CREEK	1	2	**11**
ISLAND CREEK	1	2	**0**
SAVANNAH DITCH	1	2	**347,270**
STATE TOTAL		55	**5,396,564**

The Delaware River received 92.2% of all releases to water, the Savannah Ditch 6.4%, and Beaverdam Creek 1.4%. Figure 3 shows the relative relationship of the top 13 TRI chemicals to all other chemicals (15) reported as released to water. This clearly shows the influence that nitrate compounds

FIGURE 3
TOP 13 CHEMICALS RELEASED TO WATER



have on the total. The nitrate compounds category was the top chemical released, (99.9% of the total release to water), followed by ammonia (0.04%). The remaining chemicals released to water were each 0.01% or less of the total releases to water. The Delaware City Refinery reported a release of 4,971,458 pounds of nitrate compounds to water for 2019, Perdue Georgetown reported 347,086 pounds, and Allen Harim Harbeson reported 73,217. The biological treatment of nitrogen-containing substances such as ammonia and animal waste is responsible for the formation of nitrate compounds, which are released to water. Metallic compounds (cobalt, cyanide, lead, and zinc) are generally products of fuel combustion, and petroleum, ore and metal refining. The Delaware City Refinery, V&S Delaware Galvanizing, and Clarios Battery Plant, are the facilities reporting releases of these metal compounds to water.

Table 4 shows the total amount of TRI chemicals for 2019 released to each basin in the State of Delaware. The Inland Bays include lands that drain into the Indian River Bay/Rehoboth Bay area, then to the Atlantic Ocean. The Piedmont Basin contains lands that drain to the portion of the Delaware River above the City of New Castle. The Delaware River, Christina River, Army Creek, Beaverdam Creek, and Drawyer Creek all eventually feed into the Delaware Bay. Sandy Branch and Deep Creek feed into the Nanticoke River, and then to the Chesapeake Bay. Island Creek and Savannah Ditch feed into the Inland Bays, and then into the Atlantic Ocean. The total amount released to water decreased by 19,469 pounds in 2019, largely the result of a decrease in the reported release of nitrate compounds by the Delaware City Refinery. Additional discussion about these releases can be found in the **Trend Analysis** section starting on page 30.

TABLE 4

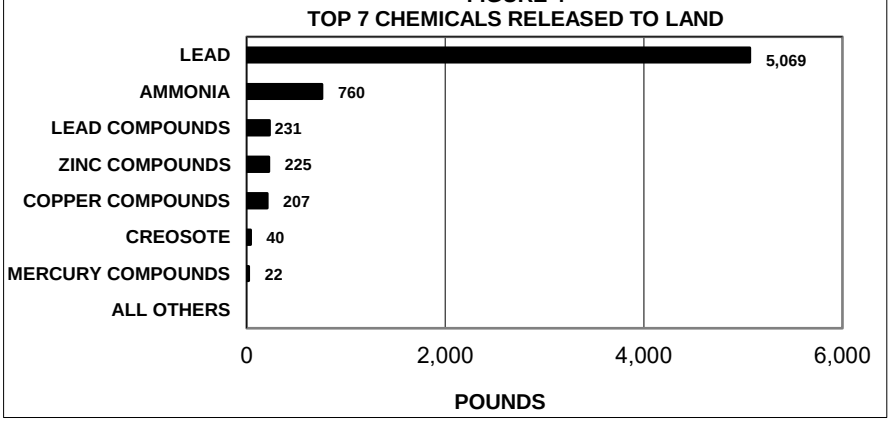
TRI CHEMICALS RELEASED TO WATER BY BASIN IN 2019

BASIN	RELEASE (IN POUNDS)	PERCENT
CHESAPEAKE	0	0.0%
DELAWARE BAY	5,049,293	93.6%
INLAND BAYS	347,270	6.4%
PIEDMONT	1	0.0%
STATE TOTAL	**5,396,564**	**100.0%**

Releases to Land

Releases to land are shown in Table 2 on page 6. These releases are relatively small, amounting to 0.1% of total on-site releases. Figure 4 shows the contribution for the 7 chemicals reported as being released to land. The largest 2019 release to land was lead. All of the 2019 releases to land were metals and metal compounds, with the exceptions of ammonia and creosote. Most of the metals and metal compounds reported were deposited by ammunition use, or

FIGURE 4
TOP 7 CHEMICALS RELEASED TO LAND



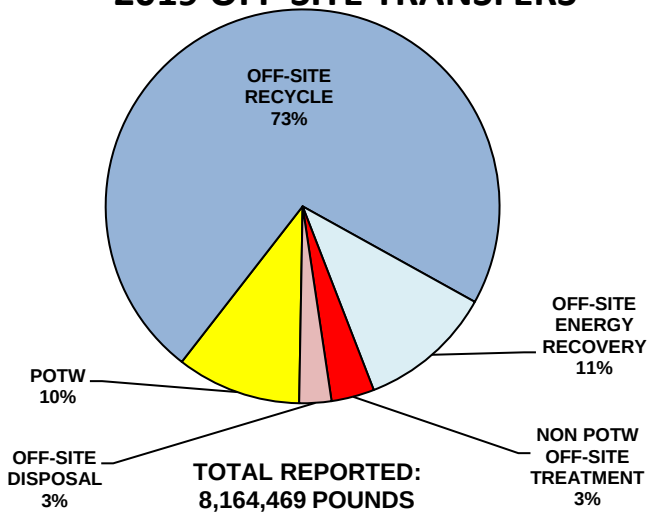
formed during combustion from metal impurities that exist in coal or oil, or are contained in the base metal scrap produced in metal working processes. Lead, lead compounds, zinc compounds, copper compounds, and mercury compounds were the metals and metal compounds reported, accounting for 88% of all on-site releases to land and were primarily reported by one facility. The U. S. Army's National Guard Training Site Range reported the largest amount, 5,027 pounds of lead released to land. Mountaire Farms of Delaware reported the second largest release to land, with 760 pounds of ammonia. Additional discussion about releases to land and their trends can be found in the **Trend Analysis** section starting on page 30.

Descriptions of some of the hazards that these chemicals, which were released to air, water, or land, may cause to humans, can be found in the **Chemical Data Fact Sheets** section under **For Further Information** on page 48. Facility specific information is available via the **2019 TRI Facility Profiles,** see **Access to TRI Files** under the **Further Information Section** on page 48.

Off-Site Transfers

Off-site transfers are material transfers to off-site locations for the purpose of disposal, recycling, energy recovery, or treatment. Treatment could be at a private waste treatment facility or at a POTW, typically a city or county wastewater treatment plant. The total amounts of chemical wastes transferred off-site decreased by 30% (3,491,040 pounds) since 2018. Off-site transfers account for 2% of total TRI waste and are about 1.4 times the amount released on-site. Overall decreases were reported in off-site recycling, energy recovery, and transfers to POTW's; and increases occurred in off-site treatment and disposal. The largest reductions reported were for lead compounds sent off-site for recycling by the Clarios (formerly Johnson Controls) Battery Plant (down 2,800,700 pounds) and Distribution Center (down 1,084,195 pounds). The largest increases include the 494,671 pound increase reported by BASF for off-site recycling of methanol, and Baltimore Aircoil's reported increase of 176,973 pounds sent off-site for recycling. Figure 5 shows the relative portions of the five off-site transfer categories. Table 2 on page 6 shows these amounts in tabular form, and **Appendices D and G** provide additional detail about transfers from each facility.

FIGURE 5
2019 OFF-SITE TRANSFERS



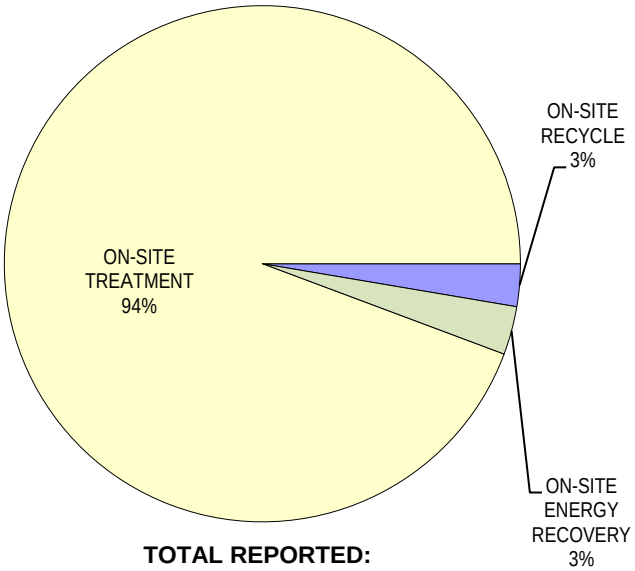
TRI chemicals in wastes are transported by various means from Delaware to their final destinations, most of which are out-of-state. For 2019, TRI chemicals were sent from Delaware TRI reporting facilities to

18 states, some as far away as Texas and North Dakota, and to Canada, in addition to locations in Delaware. Ninety-nine percent of TRI chemicals in all wastes shipped off-site (not including direct transfers to POTW's) were sent to out-of-state locations for further processing and/or disposal. However, all transfers to POTWs generated by Delaware facilities were treated in Delaware. Off-site transfer to recycle operations accounted for 73% of the amounts within the five categories in off-site transfers, while energy recovery accounted for 11%, transfers to POTWs accounted for 10%, disposals accounted for 3% of the transfers, and non-POTW treatment was 3%. Ninety-three percent of the transfers to POTWs were to the City of Wilmington POTW, and all of the 835,843 pounds treated at all POTWs were treated at Delaware POTW facilities. BASF Corp makes 48% (404,075 pounds, 88% of which is methanol) of the total TRI chemical transfers to the Wilmington POTW.

On-Site Waste Management

On-site waste management is the amount of waste that never leaves the facility and is managed by the facility on-site. These activities generally represent a lower risk to the environment, as the materials are typically destroyed on site, although a small fraction may escape treatment and these amounts are reported as on-site releases. The categories of **Treatment, Recycle, and Energy Recovery** are used to define on-site management activities related to TRI chemical wastes. The total amount of TRI chemicals managed on-site is 96.5% of the total TRI chemical waste. Figure 6 shows the portions of these wastes processed on-site. **Appendices D and G** provide additional detail for on-site waste management. Facility specific information is available via the **2019 TRI Facility Profiles,** see **Access to TRI Files** under the **Further Information Section** on page 48.

FIGURE 6
2019 ON-SITE WASTE MANAGEMENT



TOTAL REPORTED: 385,628,133 POUNDS

Waste Treatment (363,654,274 pounds) includes the amount of toxic material that was destroyed in on-site waste treatment operations. The Delaware City Refinery had the highest total amount of on-site waste treatment, combining for 343,194,315 pounds (99%) of the TRI waste treated on-site. Treatment of hydrogen sulfide at the Delaware City Refinery in the amount of 343,194, pounds was the highest single on-site treatment amount.

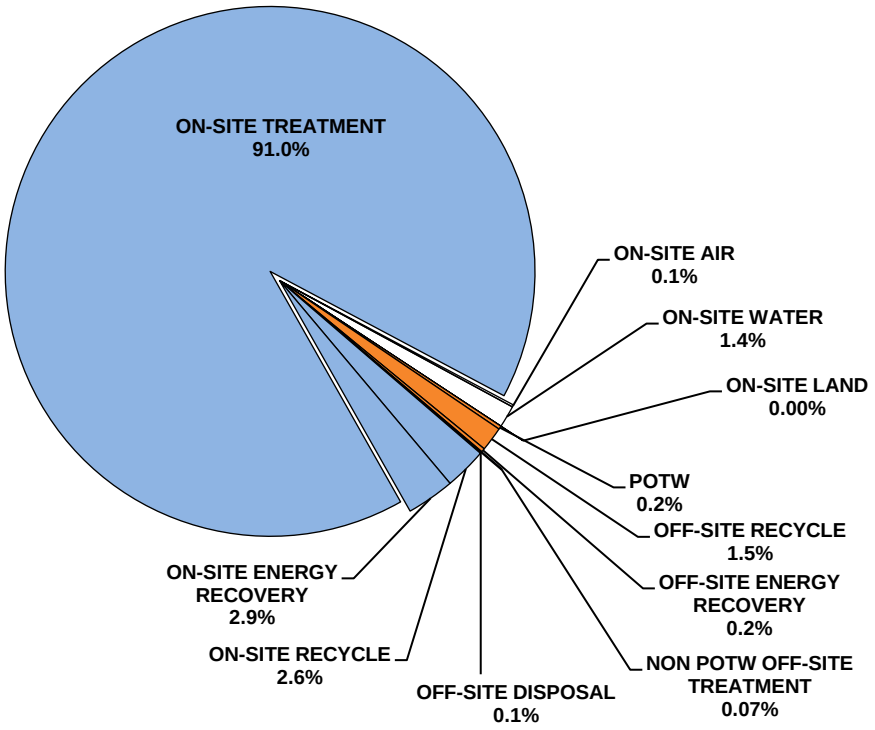
Recycled waste (10,280,608 pounds) is the quantity of toxic material recovered at the facility and made available for further use. Rohm & Haas (B2, B3, B8) recycled n,n-dimethylformamide, Air Liquide Advanced Separations recycled methanol and n-hexane, V&S Galvanizing recycled zinc compounds and lead, BASF recycled methanol, and Orient recycled aniline. These five facilities combined to report 99.7% of the total amount recycled on-site.

Energy Recovery includes the quantity of toxic material that had heat value and was combusted in some form of energy recovery device such as a heat boiler. The Delaware City Refinery was the only facility in the State to report on-site energy recovery. For 2019, the refinery reported 11,693,251 pounds of TRI chemicals processed on-site for energy recovery, with ammonia accounting for 94.3% or 11 million pounds.

Total TRI Waste

Total TRI waste is the combined total of the on-site release, off-site transfer, and on-site waste management amounts in the TRI chemical reports. Figure 7 provides a perspective of the total TRI chemical waste picture in Delaware. About 1.5% of the total reported TRI waste is released on-site, 2% is transferred off-site for treatment or disposal, and 96.5% is managed on-site through treatment, energy recovery, and recycle operations by the facilities generating the waste. Figure 7 shows the relative portions of the various sub-categories of TRI release and waste management.

FIGURE 7
TOTAL 2019 TRI CHEMICAL MANAGEMENT
TOTAL REPORTED: 399,717,314 POUNDS

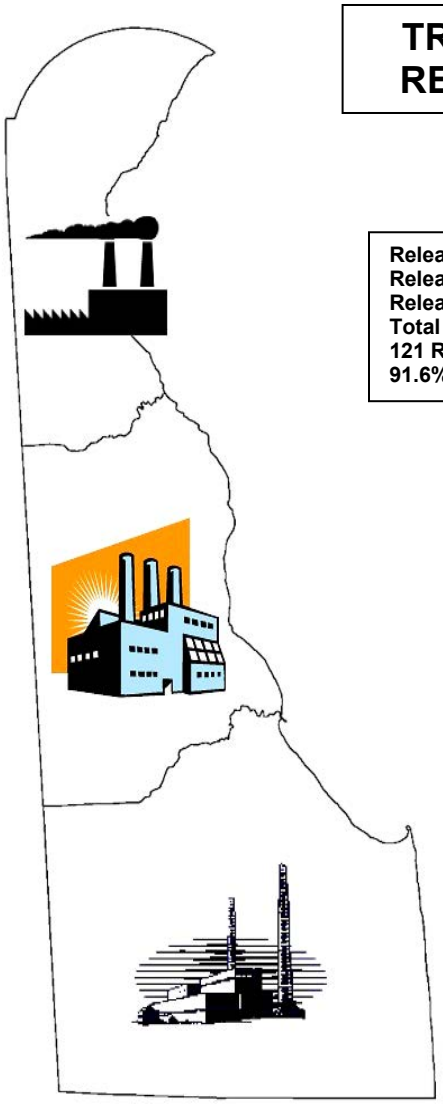


2019 Data Detail

On-Site Releases by County

Figure 8 below provides basic on-site release information for each county in the State.

FIGURE 8



TRI ON-SITE RELEASES REPORTED BY COUNTY

NEW CASTLE

Releases to Air = 445,273 Pounds
Releases to Water = 4,976,077 Pounds
Releases to Land = 5,105 Pounds
Total On-Site Releases = 5,426,456 Pounds
121 Reports, 32 Facilities
91.6% of Statewide Releases

KENT

Releases to Air = 21,738 Pounds
Releases to Water = 0 Pounds
Releases to Land = 4 Pounds
Total On-Site Releases = 21,742 Pounds
22 Reports, 9 Facilities
0.4% of Statewide Releases

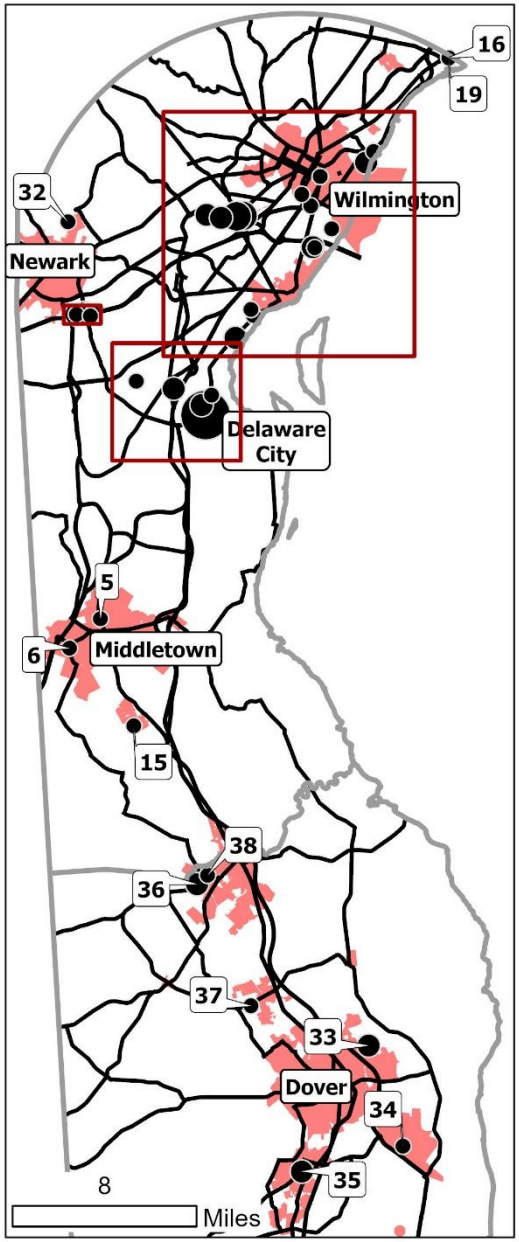
SUSSEX

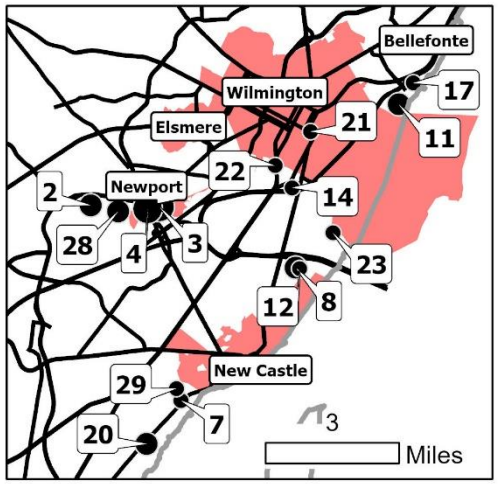
Releases to Air = 54,581 Pounds
Releases to Water = 420,487 Pounds
Releases to Land = 1,446 Pounds
Total On-Site Releases = 476,514 Pounds
44 Reports, 18 Facilities
8.0% of Statewide Releases

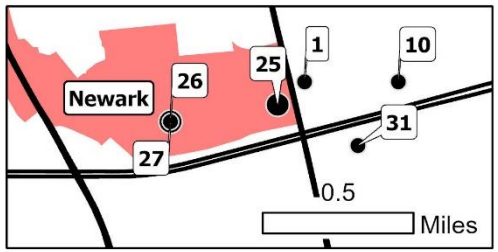
Source: DNREC 2019 TRI Database 10-1-20

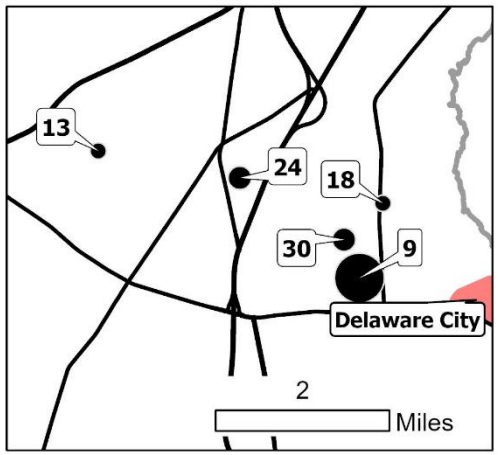
Facility Locations and Information

The map on the following two pages shows the location of each reporting facility in the State, with the facility location marker size depicting the size of its on-site release relative to other facilities in Delaware. Facility contact information is in Appendix B. The **2019 Facility Profiles** provide a facility overview (see **Access to TRI Files** under the **Further Information section** on page 48).

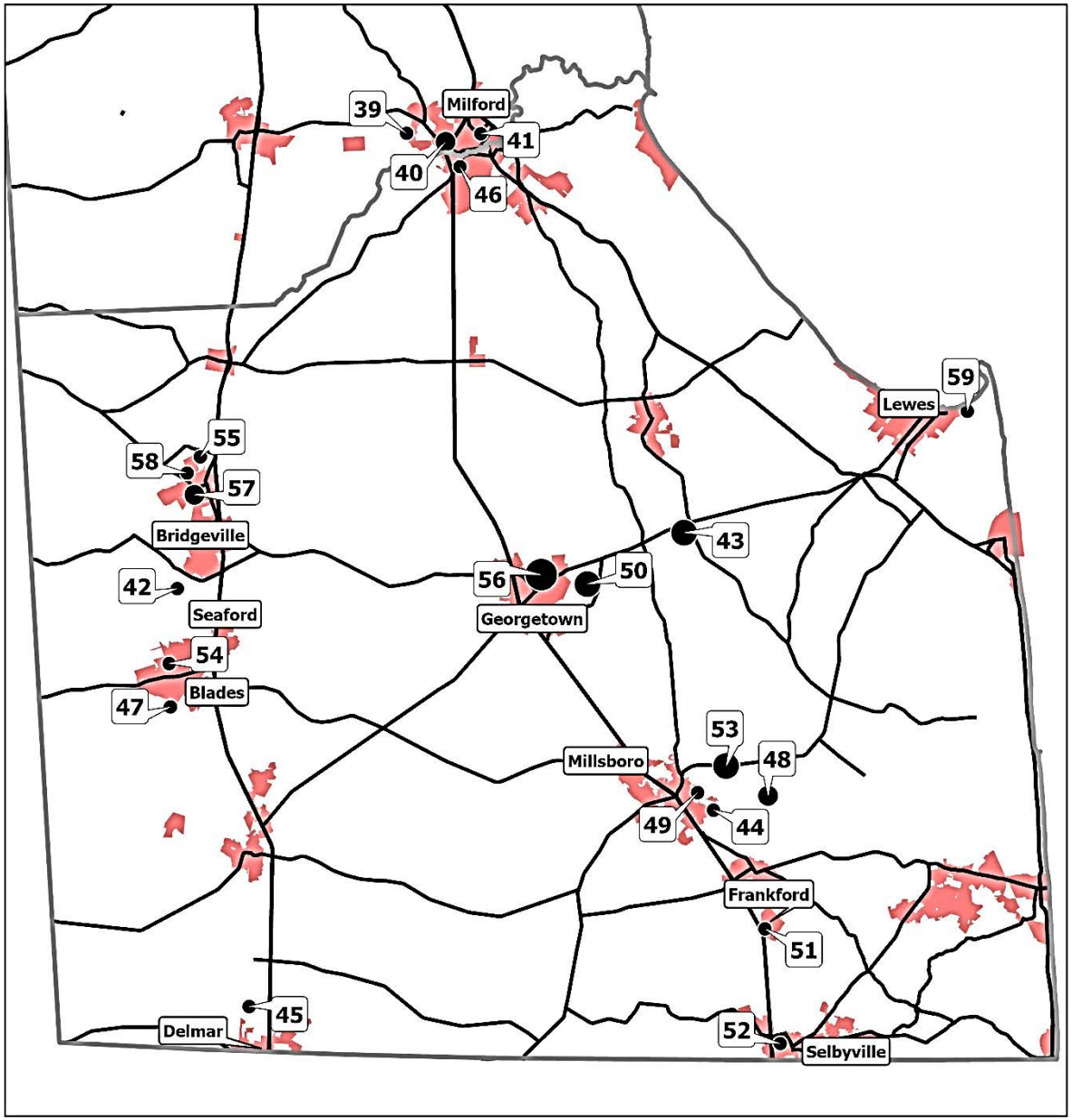








MAP ID	FACILITY
	NEW CASTLE COUNTY FACILITIES
1	AEARO TECHNOLOGIES
2	AGILENT TECHNOLOGIES
3	AIR LIQUIDE ADVANCED SEPARATIONS
4	BASF COLORS AND EFFECTS USA LLC
5	CLARIOS BATTERY PLANT
6	CLARIOS DISTRIBUTION CENTER
7	COLOR WORKS PAINTING INC
8	CRODA
9	DELAWARE CITY REFINERY
10	DUHADAWAY TOOL & DIE SHOP INC
11	EDGE MOOR/HAY ROAD ENERGY CENTERS
12	FUJIFILM
13	HMA-HERITAGE CONCRETE-BEAR
14	HMA-HERITAGE CONCRETE-HEALD STREET
15	HMA-HERITAGE CONCRETE-MIDDLETOWN
16	HONEYWELL
17	IKO
18	KUEHNE
19	MESSER LLC
20	NATIONAL GUARD TRAINING SITE RANGE
21	NORAMCO INC
22	OWEN STEEL COMPANY
23	PRINCE MINERALS LLC
24	ROGERS CORP
25	ROHM & HAAS B2 B3 B8
26	ROHM & HAAS B5 B6
27	ROHM & HAAS B7 B15
28	TWINCO ROMAX
29	V&S DELAWARE GALVANIZING
30	VEOLIA - RED LION PLANT
31	VP RACING FUELS
32	W. L. GORE
	KENT COUNTY FACILITIES
33	CALPINE CORP - GARRISON ENERGY CENTER
34	DOVER AFB
35	HANDYTUBE
36	HANOVER FOODS
37	HMA-HERITAGE CONCRETE-CHESWOLD
38	METAL MASTERS



MAP ID	FACILITY
	KENT COUNTY FACILITIES
39	BALTIMORE AIRCOIL COMPANY
40	DENTSPLY SIRONA WEST PLANT
41	PERDUE MILFORD
	SUSSEX COUNTY FACILITIES
42	ALLEN HARIM FARMS SEAFORD MILL
43	ALLEN HARIM FOODS HARBESON
44	ALLEN HARIM FOODS MILLSBORO
45	AMICK FARMS
46	DENTSPLY SIRONA MAIN PLANT
47	GAC SEAFORD
48	INDIAN RIVER GENERATING STATION
49	INTERVET
50	JUSTIN TANKS
51	MOUNTAIRE FARMS - FRANKFORD MILL
52	MOUNTAIRE FARMS - SELBYVILLE
53	MOUNTAIRE FARMS OF DELAWARE
54	ORIENT CORP
55	PERDUE BRIDGEVILLE
56	PERDUE GEORGETOWN
57	PICTSWEET BRIDGEVILLE
58	SIMMONS BRIDGEVILLE
59	SPI PHARMA

The size of the facility marker indicates the relative amount of on-site release.

8.5 Miles

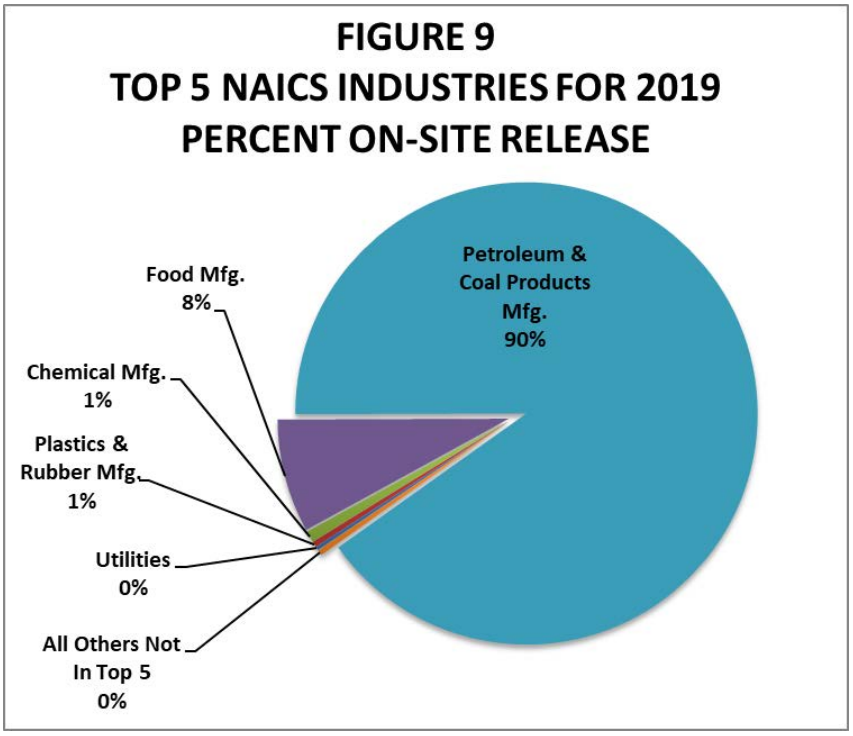
NAICS Industry Groups

Table 5 provides a description of each North American Industrial Classification System (NAICS) industry group and the number of facilities in each group that reported in Delaware, along with the total reported amounts for each NAICS code. This table also provides on-site releases, off-site transfers, and wastes managed on-site for each group.

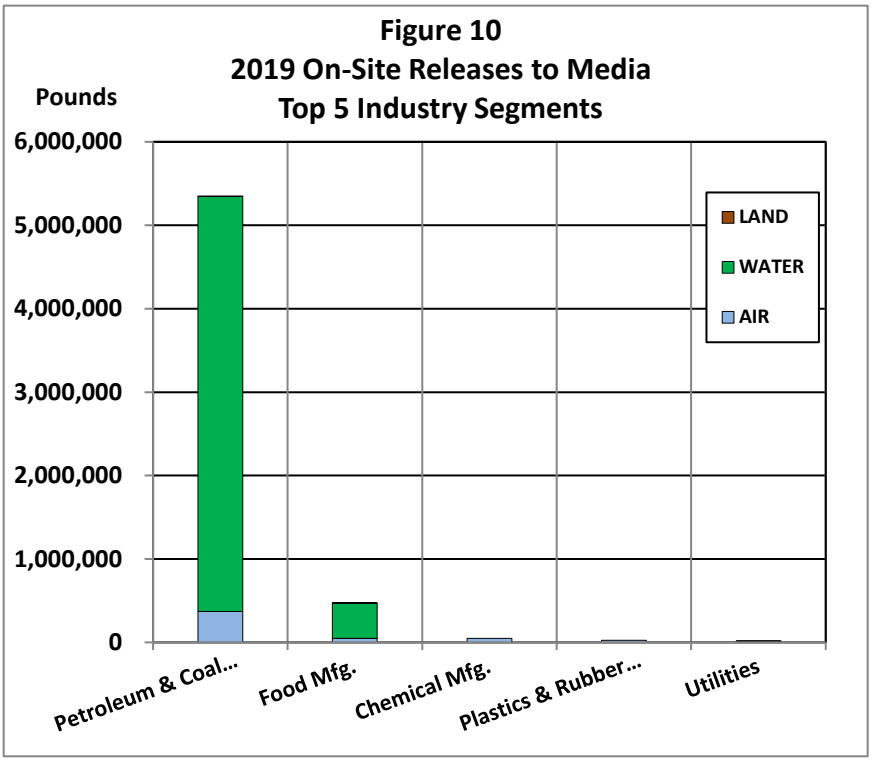
TABLE 5
2019 TRI DATA BY PRIMARY NAICS GROUP
(in pounds)

NAICS CODE	INDUSTRY GROUP	REPORTS	FACILITIES	FORM A	FORM R	ON-SITE RELEASE	OFF-SITE TRANSFERS	ON-SITE WASTE MGMT.
212	Mining	3	1	2	1	2	0	0
221	Utilities	12	3	2	10	15,185	66	442,031
311	Food Mfg.	32	13	14	18	470,168	63,895	2,016,479
313	Textile Products Mfg.	7	3	0	7	7,295	471,202	4,991,547
324	Petroleum & Coal Products Mfg.	41	4	2	39	5,344,754	144,004	371,741,155
325	Chemical Mfg.	43	13	4	39	46,858	1,802,310	1,566,417
326	Plastics & Rubber Mfg.	11	4	0	11	24,060	250,056	4,497,217
327	Non-metallic Mineral Product Mfg.	4	4	0	4	42	0	0
331	Primary Metal Mfg.	4	1	0	4	4,420	95,820	0
332	Fabricated Metal Product Mfg.	10	5	0	10	875	463,745	373,287
333	Equipment Mfg.	5	1	0	5	0	999,621	0
334	Computers and Electronic Products	1	1	0	1	0	7	0
335	Electrical Equipment Mfg.	5	2	0	5	37	3,864,763	0
339	Misc. Manufacturing	3	2	0	3	5,778	8,980	0
928	National Security	6	2	0	6	5,237	0	0
	TOTAL	187	59	24	163	5,924,712	8,164,469	385,628,133

Figure 9 shows the percent contribution of each of the top five NAICS groups and all others not in the top five, compared to the reported total on-site releases. The top five NAICS groups 324 (Petroleum and Coal Products Mfg.), 311 (Food Manufacturing), 325 (Chemical Mfg.), 326 (Plastics and Rubber Mfg.), and 221 (Utilities), account for 99.6% of the total on-site releases within the State. Facilities not in the top five NAICS industry groups contributed only 23,687 pounds of on-site releases, less than 0.4% of the 2019 on-site release total.



Depending on the NAICS group, releases to air, water, and land can be very different. Figure 10 shows the top 5 NAICS groups in Delaware and to what media the releases occurred. For example, petroleum and coal products manufacturing reported 7% of their releases were to air, and 93% of their releases were to water. Food manufacturing reported 10% of their releases were to air, and 90% of their releases were to water. Both chemical manufacturing and plastics and rubber manufacturing reported 100% of their releases were to air. Utilities reported having their releases split between air and land, with 98% of the releases to air and 2% of the releases to land. Keep in mind this is based on a small sample size due to the overall low number of facilities reporting in Delaware. Other states will have greatly different results among NAICS groups, particularly those states whose industries have little presence in Delaware, such as mining or forestry/paper products manufacturing.



RELEASES FROM THE TOP 15 FACILITIES

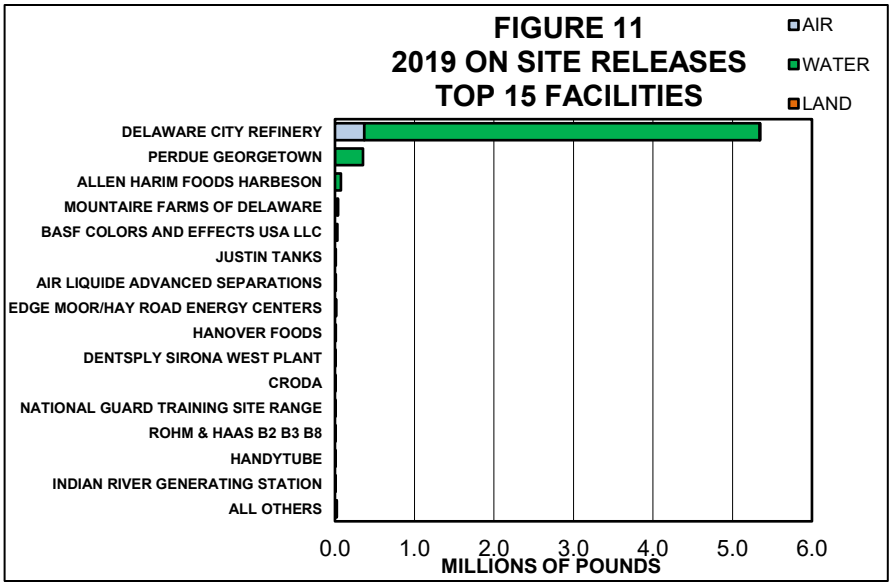


Figure 11 shows the relative contribution of each of the top 15 reporting facilities to on-site releases. The top five facilities accounted for 5,837,403 pounds, or 98.5% of all on-site releases. Of the 5,924,712 pounds that were reported as released on-site by all 59 facilities Statewide, the top 15 facilities accounted for total releases of 5,904,759 pounds, or 99.7% of the total on-site releases.

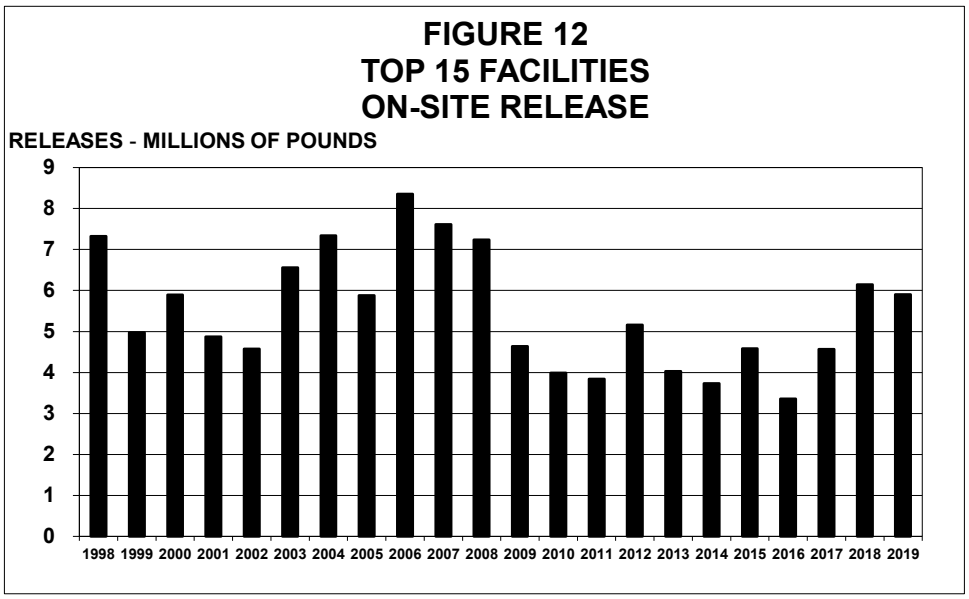
TABLE 6
TOP 15 FACILITIES 2018 AND 2019 RANKING BY ON-SITE RELEASE
(in pounds)

2018 RANK	2019 RANK	FACILITY	2019 TOTAL AIR	2019 TOTAL WATER	2019 TOTAL LAND	2019 ON-SITE RELEASE	2018 ON-SITE RELEASE	2018 TO 2019 CHANGE IN RELEASES	
1	1	DELAWARE CITY REFINERY	368,969	4,975,745	40	5,344,754	5,665,307	(320,553)	-6%
2	2	PERDUE GEORGETOWN	3,956	347,270	-	351,226	249,228	101,998	41%
3	3	ALLEN HARIM FOODS HARBESON	0	73,217	-	73,217	61,673	11,544	19%
6	4	MOUNTAIRE FARMS OF DELAWARE	34,853	-	1,192	36,045	15,748	20,298	129%
5	5	BASF COLORS AND EFFECTS USA LLC	32,161	-	-	32,161	29,352	2,809	10%
8	6	JUSTIN TANKS	11,166	-	-	11,166	13,362	(2,196)	-16%
9	7	AIR LIQUIDE ADVANCED SEPARATIONS	10,426	-	-	10,426	10,401	25	0%
10	8	EDGE MOOR/HAY ROAD ENERGY CENTERS	8,754	1	-	8,755	10,174	(1,419)	-14%
DNR	9	HANOVER FOODS	8,380	-	-	8,380	-	8,380	-
15	10	DENTSPLY SIRONA WEST PLANT	5,778	-	-	5,778	5,778	-	0%
14	11	CRODA	5,457	-	-	5,457	6,484	(1,028)	-16%
12	12	NATIONAL GUARD TRAINING SITE RANGE	0	-	5,027	5,027	7,816	(2,789)	-36%
NR	13	ROHM & HAAS B2 B3 B8	4,468	-	-	4,468	4,468	0	0%
NR	14	HANDYTUBE	4,420	-	-	4,420	1,313	3,107	237%
11	15	INDIAN RIVER GENERATING STATION	3,226	-	254	3,480	9,692	(6,213)	-64%
		ALL OTHERS	**19,579**	**332**	**42**	**19,953**	**78,997**	**(59,044)**	**-75%**
		TOP 15	**502,014**	**5,396,233**	**6,513**	**5,904,759**	**6,090,796**	**(186,036)**	**-3%**
		STATE TOTALS, ALL FACILITIES	**521,593**	**5,396,564**	**6,555**	**5,924,712**	**6,169,792**	**(245,080)**	**-4%**

NR- Not ranked in the top 15 for 2018
DNR- Did not report in 2018
Source: 2018 and 2019 DNREC TRI Databases, October 2020

Table 6 shows the 2019 ranking of the top 15 facilities along with their 2018 ranking and the reported amounts of on-site releases for both years. Releases to the environment because of remedial actions, accidents, or one-time catastrophic events are included in these values. The percent change in total on-site releases for each of the top 15 facilities from 2018 to 2019 is also shown, and some of these changes are significant.

Figure 12 shows the totals for on-site releases for the top 15 reporting facilities from 1998-2019, not adjusted for changes in reporting requirements. The total on-site release trend for the top 15 facilities is down 241,760 pounds (4%) since 2018 and down 1.4 million pounds (19%) since 1998 after reaching a peak of 8.4 million pounds in 2006. These facilities reported 99.7% of the total on-site releases in the State for 2019, while the remaining 44 facilities reported 0.4%.



Seven facilities of the top 15 facilities reported an increase in on-site releases, six reported a decrease, and two reported no change in releases for 2019. Changes at the facility, such as

the way releases are estimated, how waste is managed, changes in raw materials or processing methods, or installation of new or improved equipment possibly used to limit or eliminate releases of specific chemicals or all chemicals, may affect reported releases. The largest change in total pounds of on-site releases reported by the top 15 facilities was a decrease in sulfuric acid released to air reported by the Delaware City Refinery, down by 175,073 pounds. The Refinery also reported a large decrease in the releases of nitrate compounds to water, down by 127,242 pounds compared to 2018. A significant increase in releases of nitrates to water was reported by Perdue in Georgetown (up 98,063 pounds). Mountaire Farms of Delaware reported a 33,800 pound increase in ammonia releases for 2019.

Although the TRI program itself does not regulate or limit emissions, other DNREC and federal programs do issue permits and limit emissions from operating facilities. TRI data is also shared with other programs within DNREC to verify data accuracy and to provide data and information to those programs.

Facilities No Longer Reporting to TRI

In the normal annual cycle of TRI reporting, some facilities may fall below the reporting thresholds and some facilities may close. In recent years, this involved the annual loss of 1-3 facilities, partially offset by 1-3 new facilities that started to report each year.

There were two facility name changes for 2019: Johnson Controls to Clarios, and DYK Automotive to Twinco Romax. And the Clarios (formerly Johnson Controls) battery plant filed their last TRI report for 2019 because they ceased operations during the year. Hirsh in Dover fell below the TRI reporting threshold for 2019 due to conversion to powder paint in early 2019.

New Facilities Reporting to TRI

Hanover Foods, which fell below the TRI reporting threshold for 2018, reported for 2019. The W. L. Gore facility on Paper Mill Road in Newark reported to TRI in 2019, for the first time since 2011. Allen Harim in Millsboro reported to TRI in 2019, for the first time since the Pinnacle Foods facility previously at this location last reported to TRI in 1991. Simmons in Bridgeville, and Messer in Claymont, were new TRI reporters for 2018. Simmons provides frozen meat ingredients for the pet food industry. Messer produces industrial gas products. Calpine Corporation's Garrison Energy Center in Dover filed TRI reports for the first time for the 2016 reporting year. DYK Automotive LLC in Wilmington also report to TRI for the first time for 2016. More information concerning these facilities is contained in this report, the report **Appendices**, and the **2019 TRI Facility Profiles**.

Persistent Bioaccumulative Toxic (PBT) Chemicals, 2009-2019

For reporting year 2000 and beyond, the EPA established substantially lower reporting thresholds for 12 existing chemicals and one chemical category that are highly persistent and bioaccumulative in the environment. Six new chemicals and one new category were also added to the PBT list for 2000. The new thresholds apply regardless of whether the PBT chemical is manufactured, processed, or otherwise used. For 2011, four of the 16 new chemicals added were also PACs, and they are now included in the PACs category.

Table 7 provides a current list of the PBT chemicals and their thresholds, and the number of reports received for each chemical for 2019.

TABLE 7
2019 DELAWARE PBT CHEMICALS AND REPORTING THRESHOLDS
(pounds/year)

Chemical or Chemical Category	Threshold (Pounds)	2019 REPORTS
Aldrin	100	0
Benzo[g,h,l]perylene	10	2
Chlordane	10	0
Dioxin and dioxin-like compounds category	0.1 grams	1
Heptachlor	10	0
Hexabromocyclododecane Category	100	0
Hexachlorobenzene	10	0
Isodrin	10	0
Lead	100	7
Lead compounds category	100	6
Mercury	10	1
Mercury compounds category	10	3
Methoxychlor	100	0
Octachlorostyrene	10	0
Pendimethalin	100	0
Pentachlorobenzene	10	0
Polychlorinated biphenyls (PCBs)	10	0
Polycyclic aromatic compounds category (PACs)	100	3
Tetrabromobisphenol A	100	0
Toxaphene	10	0
Trifluralin	100	0
	TOTAL	23

PBTs have been receiving increased scrutiny as we have learned more about them, and reporting of PBTs has been progressively emphasized. These chemicals are of particular concern because they are not only toxic, but also because they remain in the environment for long periods of time, are not readily destroyed, and accumulate in body tissues.

In 2008, new data elements became available for dioxin and dioxin-like compounds (DLCs). The 17 compounds that fall under the TRI category of DLCs have a wide range (1.0000 to 0.0003) of toxicity; these values are called the Toxic Equivalent Factor (TEF). In order to compare them on an equal toxicity basis, we multiply the TEF by the pounds reported to get the Toxic Equivalent Quantity (TEQ). Facilities reporting on dioxins are also now required to report the amounts released or managed as waste for each of the 17 DLCs. See **Appendix M** for a copy of the DLC reporting form, Schedule 1. These amounts are provided along with the original amount reported in pounds. See page 23 for additional detail on dioxins.

Table 8 shows the results of PBT reporting for 2017-2018 compared to total 2019 TRI data. The total count of PBT reports, 23, is lower than the counts of all recent years except 2017 and 2018. PBT on-site releases for 2019 comprise 0.1% of the total TRI on-site releases. Total PBT wastes are 1% of total TRI wastes. No PBT reports can be filed on Form A. See page 3 for an explanation of PBT and non-PBT chemicals.

PBT on-site releases were lower for 2019 by 2,961 pounds (33%); with the greatest decrease coming from the U. S. Army's National Guard River Road Training Site Range in New Castle with lower releases of lead to land by 2,789 pounds. Lead and lead compounds made up 94% of the total on-site PBT releases for 2019. Since 2009, the trend of PBT on-site releases is down 71%.

TABLE 8
2018 TRI PBT DATA SUMMARY
(IN POUNDS)

	PBTs only 2017	PBT's only 2018	PBT's only 2019
No. of Facilities	12	14	15
No. of Form A's	NA	NA	NA
No. of Form R's	19	23	23
No. of Chemicals	7	7	7
On-Site Releases			
Air	517	505	472
Water	62	24	129
Land	4,440	8,356	5,323
On-Site Releases	5,018	8,885	5,924
Off-Site Transfers			
POTW's	1	6	2
Recycle	6,932,803	7,729,401	3,840,350
Energy Recovery	0	0	0
Treatment	0	0	0
Disposal	2,978	1,430	11,116
Total Transfers	6,935,781	7,730,838	3,851,468
On-Site Waste Mgmt.			
Recycle	7,873	4,122	2,428
Energy Recovery	0	0	0
Treatment	825	842	824
Total On-Site Mgmt.	8,698	4,964	3,252
Total PBT Waste	6,949,497	7,744,687	3,860,644

The total PBT waste amount decreased by 3,884,043 pounds (50%) for 2019 compared to 2018. The primary reason for this increase was the decreased transfers of lead compounds to off-site recycling by Clarios (formerly Johnson Controls), due to the 2019 shutdown of their battery plant.

Table 9, on page 23, shows the amounts of each PBT chemical reported as released by the TRI reporting facilities in 2019. The Delaware City Refinery reported the largest PBT release to air, 237 pounds of polycyclic aromatic compounds (PACs); and the largest PBT release to water, 107 pounds of lead compounds. The U. S. Army's National Guard Training Site Range reported the largest release to land, 5,027 pounds of lead. Over 99% of the total PBT waste reported in 2019 was for lead compounds sent off-site by Clarios (formerly Johnson Controls Battery Plant and Distribution Center). Additional detail for mercury and mercury compounds, another important PBT, is in a separate section on page 24.

Three companies (The Delaware City Refinery, IKO, and V&S Galvanizing) reported the entire amount of on-site PBT chemical waste management. The Refinery treated 452 pounds of benzo(g,h,i)perylene and 372 pounds of polycyclic aromatic compounds (PACs) on-site. IKO recycled 550 pounds of PACs on-site and V&S Galvanizing recycled 1,878 pounds of lead on-

site. **Appendix I** shows the PBT data detail, listing each PBT chemical and the facilities reporting on it.

TABLE 9

2019 PBT RELEASE SUMMARY

(REPORTS AMOUNTS IN POUNDS)

2019 PBT CHEMICAL	FORM R REPORTS	TOTAL AIR	TOTAL WATER	TOTAL LAND	ON-SITE TOTAL	TRANSFERS OFF SITE	ON-SITE WASTE MGMT.
BENZO (G,H,I)PERYLENE	2	0.64	4.59	0.00	5.23	0.00	452.00
DIOXIN AND DIOXIN-LIKE COMPOUNDS	1	0.001288	0.000000	0.000000	0.001288	0.000000	0.001288
LEAD	7	8.50	3.00	5068.83	5080.33	1441.10	1,878.00
LEAD COMPOUNDS	6	113.50	117.30	231.30	462.10	3,849,795.37	0.00
MERCURY	1	0.6800	0.0000	0.0000	0.6800	61.9200	0.0000
MERCURY COMPOUNDS	3	104.8000	0.7500	22.4000	127.9500	7.4411	0.0000
POLYCYCLIC AROMATIC COMPOUNDS	3	243.61	3.84	0.00	247.45	162.70	922.20
TOTALS	**23**	**472**	**129**	**5,323**	**5,924**	**3,851,469**	**3,252**

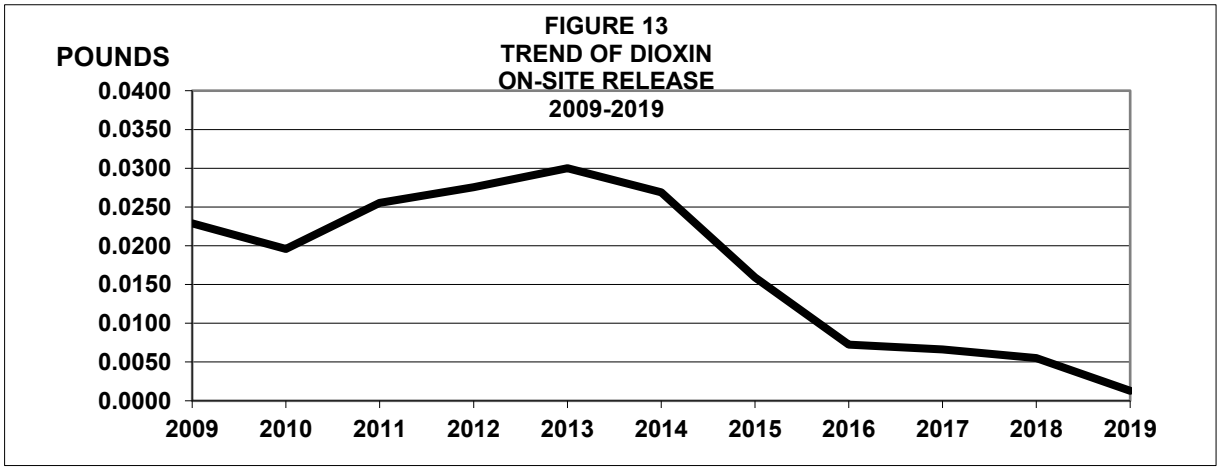
Source: 2019 DNREC TRI Database, October 2020

Dioxins are reportable in grams and have been converted to pounds for this report.

Four decimal places are used where small amounts are not -0-.

Dioxin and Dioxin-Like Compounds

The term "dioxins" is used by the EPA TRI program and in this report to indicate the group of 17 dioxins and dioxin-like compounds (DLCs) reportable to TRI, out of a family of several hundred dioxins and dioxin-like compounds, including furans. These dioxins are also part of the PBT category, and you can see the totals for releases and other waste management in Table 9 above. In recent years, on-site release of DLCs has been in the range of 0.6-15.8 grams. For 2019, the amount was the lowest ever reported for Delaware, at 0.6 grams (0.001288 pounds), as shown in Figure 13 below. In 2019, dioxin was reported by only one facility, the Delaware City Refinery.



On May 10, 2007, the EPA Toxics Release Inventory Program issued a final rule expanding reporting requirements for the DLCs category. The final rule requires that, in addition to the total amount released for the entire category, facilities must report the amount of each individual member for each release and waste management activity on a new form (Schedule 1). A template for the Schedule 1 form is given in **Appendix M** of this report. The reporting requirements of the final rule applied to the 2008 reporting year and to following years.

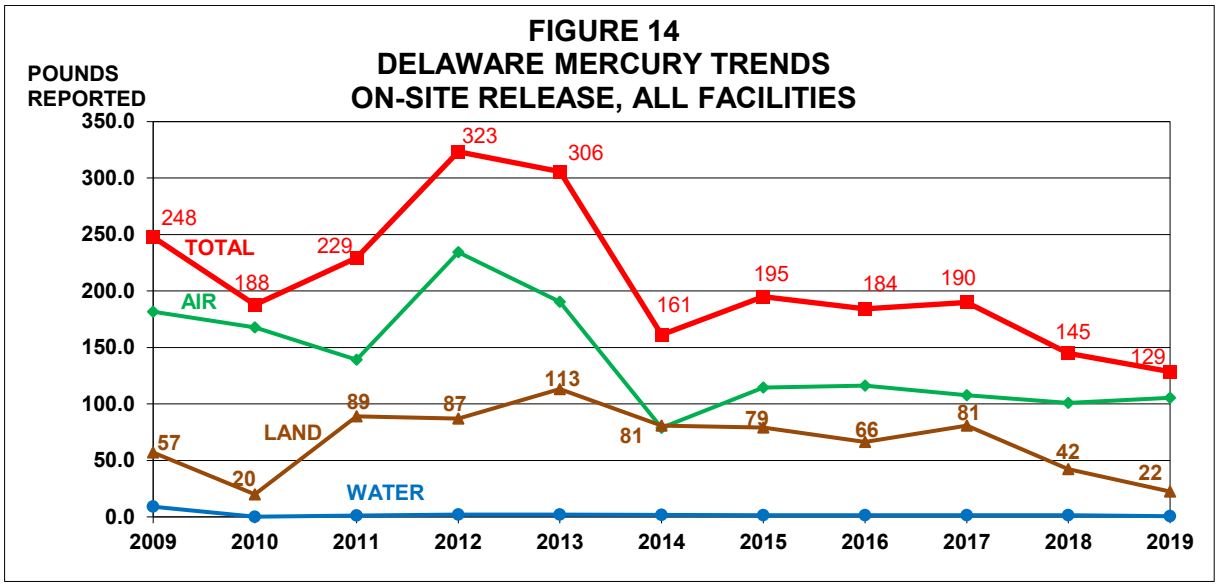
The reason for this rule is that the toxicity levels of these 17 DLCs vary greatly, and some compounds in this group have Toxic Equivalent Factors (TEF) **3,333 times less** than others. Because of this great variation, the Toxicity Equivalent Quantity (TEQ) is a way to show toxic chemical amounts on an equal toxicity basis. The EPA and DNREC use the individual mass quantity data to calculate TEQ amounts (Weight X TEF = TEQ The TEQ for all of the dioxin reported to TRI in Delaware for 2019 was 0.07 grams, which is even lower than the 2019 dioxin total, and is also the lowest TEQ ever reported for Delaware.

Mercury and Mercury Compounds

Mercury (elemental mercury) and mercury compounds are an important part of the PBT category, and this section discusses some of the data in these reports. Control of mercury and mercury compounds has become increasingly important as we have learned more about mercury, and that mercury is a serious pollutant. Children, including unborn babies, exposed to mercury compounds can have impaired functions, including verbal, attention, motor control, and intelligence. Adults may be at lower risk than children, but mercury in fish consumed by adults may lead to problems similar to those found in children, as well as reproductive and cardiovascular problems. A significant source of mercury pollution comes from the air, as mercury released from power plants is deposited on water and land, where runoff may also migrate to the water. Many lakes and streams are impaired as a result of mercury releases from coal-burning power plants. As mercury makes its way into the food chain, restrictions on eating fish harvested from these water bodies has become more commonplace.

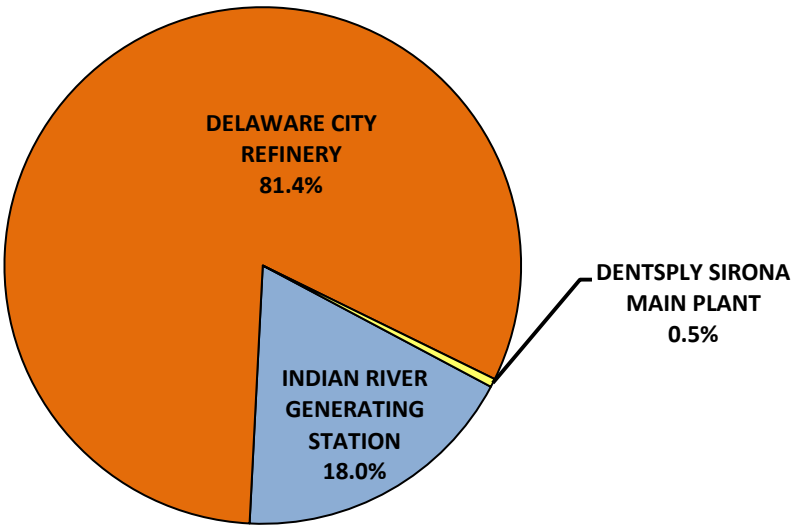
For 2019, total on-site releases of mercury and mercury compounds decreased 45 pounds (11%) to a total of 129 pounds. This was largely the result of a decrease in releases to land of 23.2 pounds by the Indian River Generating Station. On-site releases of mercury and mercury compounds on the whole are down 48% since 2009.

Figure 14 shows the combined trend for mercury and mercury compounds, and how the trend has been greatly influenced by on-site releases to air.



The Delaware City Refinery reported the highest on-site release amount of mercury for 2019, with the majority of releases to air. Indian River Generating was the second largest contributor for on-site mercury releases in 2019, with the majority of releases to land.
Figure 15 shows the percentage contributed by each of the facilities that reported a mercury or mercury compound release in 2019. On-site release amounts for mercury and mercury compounds can also be found in **Appendix F** on page **F**-7 and **Appendix I** on page **I**-1.

FIGURE 15
2019 ON-SITE MERCURY RELEASES FROM DELAWARE FACILITIES



129 POUNDS REPORTED RELEASED ON-SITE

Carcinogenic TRI Chemicals

TABLE 10
CARCINOGENS REPORTED BY DELAWARE FACILITIES FOR 2019

CHEMICAL NAME	IARC	NO. OF REPORTS
4,4'-METHYLENEBIS(2-CHLOROANILINE)	1	2
ARSENIC COMPOUNDS	1	1
ASBESTOS (FRIABLE)	1	1
BENZENE	1	1
CHROMIUM COMPOUNDS	1	2
ETHYLENE OXIDE	1	1
NICKEL COMPOUNDS	1	4
1,3-BUTADIENE	2A	1
CREOSOTE	2A	1
LEAD	2A	7
LEAD COMPOUNDS	2A	6
N,N-DIMETHYLFORMAMIDE	2A	2
TRICHLOROETHYLENE	2A	1
COBALT COMPOUNDS	2B	1
CUMENE	2B	2
ETHYLBENZENE	2B	3
HYDRAZINE	2B	1
HYDRAZINE SULFATE	2B	1
MOLYBDENUM TRIOXIDE	2B	1
NAPHTHALENE	2B	4
NICKEL	2B	3
NITROBENZENE	2B	1
P-CHLOROANILINE	2B	1
POLYCYCLIC AROMATIC COMPOUNDS	2B	3
PROPYLENE OXIDE	2B	1
STYRENE	2B	2
TETRACHLOROETHYLENE	2B	1
TOLUENE DIISOCYANATE (MIXED ISOMERS)	2B	1
CHEMICALS = **28**	REPORTS = **56**	

Source: 2019 DNREC TRI Database, October 2020

Some chemicals are reportable under TRI because they are carcinogens, and are known or suspected to cause cancer in humans. Table 10 shows those carcinogens that were reported by Delaware facilities for 2019. Each chemical is determined to be a carcinogen by either the International Agency for Research on Cancer (IARC) or the National Toxicology Program (NTP). Next to the chemical is their rating listed as: Known (1), Probable (2A), or Possible (2B) carcinogen. Of the 5.9 million pounds of TRI chemicals reported by facilities in Delaware as released on-site to the environment in 2019, 20.7% (24,299 pounds) were known or suspected carcinogens. Nine existing TRI chemicals were added to the list of carcinogens starting with the 2017 TRI reporting year. Of these chemicals, only cumene, a possible carcinogen, is reported by two Delaware facilities, the Delaware City Refinery and the Dover Air Force Base. Two existing TRI chemicals, Molybdenum trioxide and N,N-dimethylformamide are new additions to this list for the 2019 reporting year. For additional information on cancer rates and causes, please go to the Division of Public Health cancer web site listed in the "**For Further Information"** section on page 48.

Carcinogen Trends, 2009-2019

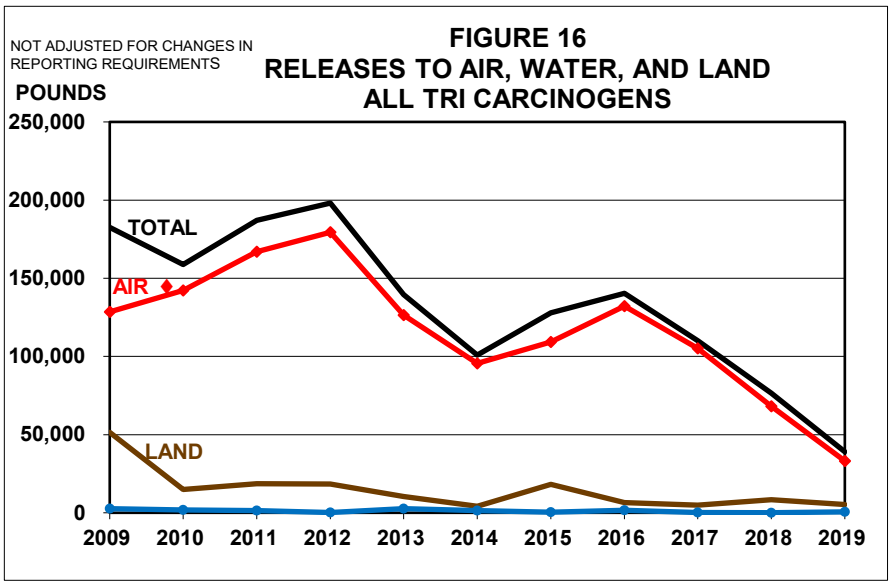
The number of facilities reporting on carcinogens for 2019 was 33, up from 31 facilities in 2018. The number of carcinogen reports increased by four to 56 in 2019; and the total number of reported carcinogenic chemicals remained the same, at 28. On-site releases of all carcinogens decreased 49% (37,513 pounds) compared to 2018, and have decreased 95.4% (817,879 pounds) since the peak in 1998. Releases of some individual chemicals in the carcinogen category have also trended downward: over the last ten years releases of lead and lead compounds are down by 71%, and releases of polycyclic aromatic compounds (PAC's) are down by 65%. The largest 2019 decreases in on-site releases were Formosa Plastics' reported decrease in vinyl chloride releases (down 22,741 pounds), and vinyl acetate releases (down 15,114 pounds), due to a 2018 shutdown of the facility. Other carcinogens saw smaller decreases in releases, with some facilities reporting increases. See **Appendix J** for detailed information on 2019 carcinogen releases.

Table 11 shows amounts released on-site for carcinogens from 2009-2019, and Figure 16 shows the trend, which has been generally downward during this time period.

TABLE 11
2009-2019 TRI CARCINOGENS
REPORTED ON-SITE RELEASES, NOT ADJUSTED

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
KNOWN											
AIR	60,664	63,975	70,033	73,545	58,914	59,175	51,188	51,619	55,355	32,373	7,680
WATER	2,059	576	1,318	121	429	1,187	226	1,584	11	11	405
LAND	26,843	8,843	552	558	411	0	0	0	0	0	0
KNOWN TOTAL	89,567	73,394	71,903	74,224	59,753	60,362	51,413	53,203	55,366	32,384	8,085
PROBABLE											
AIR	11,112	15,175	16,040	7,008	7,480	7,568	4,629	4,337	1,721	1,736	9,301
WATER	5	1,146	124	58	163	97	82	23	52	14	120
LAND	7,115	5,404	17,458	17,017	8,991	3,351	17,278	6,106	4,487	8,390	5,340
PROBABLE TOTAL	18,232	21,725	33,623	24,083	16,633	11,016	21,989	10,466	6,260	10,140	14,761
POSSIBLE											
AIR	56,817	63,059	80,974	98,864	60,152	28,732	53,472	76,332	48,169	33,997	16,162
WATER	522	38	25	20	2,053	29	30	14	24	24	24
LAND	17,459	615	562	901	947	817	979	365	330	0	0
POSSIBLE TOTAL	74,798	63,713	81,561	99,785	63,152	29,577	54,481	76,711	48,523	34,021	16,186
TOTAL AIR	128,593	142,210	167,047	179,417	126,545	95,475	109,289	132,288	105,245	68,106	33,143
TOTAL WATER	2,586	1,761	1,468	199	2,645	1,313	337	1,620	86	49	549
TOTAL LAND	51,417	14,862	18,572	18,476	10,348	4,168	18,257	6,471	4,817	8,390	5,340
GRAND TOTAL	182,596	158,832	187,087	198,092	139,538	100,955	127,884	140,379	110,149	76,545	39,032

Source: DNREC TRI 2019 Database, October 2020



For 2019, on-site releases of all carcinogens were down 49%, or 37,513 pounds. Figure 16 shows a trend for each of the category releases by media and the total reported carcinogen release. The general trend has been down. In recent years, releases to air have largely influenced the total, while releases to land and water play a much smaller part.

Known Carcinogens

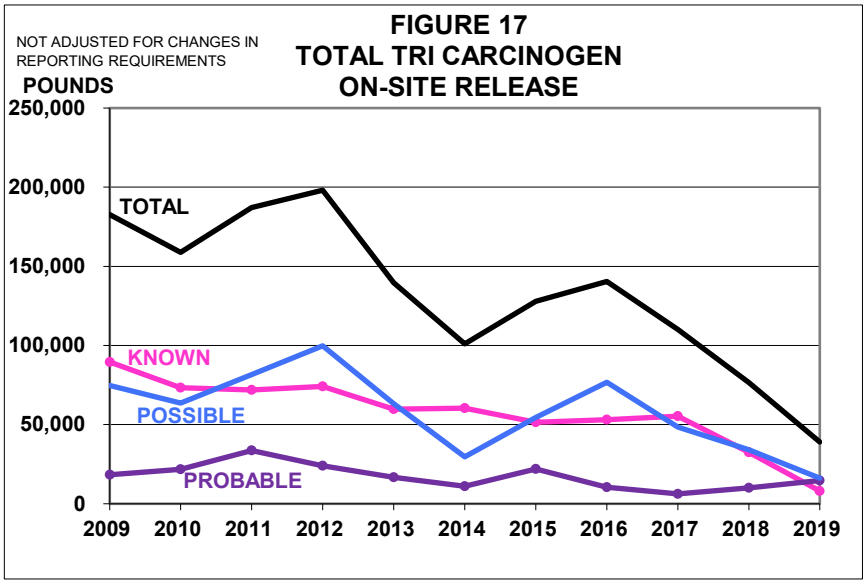
Known Carcinogens, although only making up about one fourth of the reports, are significant because of their high toxicity classification. Known carcinogens made up 20.7% of the total on-site carcinogen releases reported, the least of the three categories for 2019. Figure 17, on the next page, shows the trend of each of the three carcinogen groups and their effect on the total on-site release. On-site releases of known carcinogens decreased significantly since 2018, down by 75%. On-site releases of known carcinogens are down 575,048 pounds (98.6%) since 1998.

Almost all (95%) of the total known carcinogen amount was reported released on-site to air,

5% to land, and 0% to water for 2019. Releases to air of known carcinogens are 23.2% of all carcinogen on-site releases to air. Reported releases to air of known carcinogens decreased by 76.3% (24,693 pounds) in 2019, and are down 96.3% from the amount reported in 1998.

The highest known carcinogen in 2019 was benzene. Benzene, largely released to air, and all from the Delaware City Refinery, has declined 92% from 58,371 pounds released in 1995 (from the Delaware City Refinery and the now closed Metachem facility) to 4,614 pounds in 2019. Benzene made up 60% of the known carcinogen releases to air for 2019, up from 23% for 1995.

Nickel compounds ranks second in total on-site releases in the known carcinogen category at 2,177 pounds, 82% of which was released to air and 18% to water, 100% of which was reported by the Delaware City Refinery.



Ethylene oxide ranks third in total on-site releases in the known carcinogen category at 1,293 pounds, down from 4,886 pounds in 2018. Croda reported all of the ethylene oxide released for 2019, and releases of ethylene oxide were only to air.

Probable Carcinogens

This category has the least number of chemicals (6), resulting in 37.8% of carcinogen releases for 2019, with some important chemicals in it: lead and lead compounds, trichloroethylene (TCE), and N,N-dimethylformamide. During 2019, 63% of the six probable carcinogens reported was released on-site to air, while 36.2% was released to land, and 0.8% was released to water.

Lead, 99% of which was reported by the U. S. Army's National Guard River Road Training Site Range, was the highest reported amount for on-site releases of a probable carcinogen, with 5,027 pounds for 2019, down from 7,816 pounds reported in 2018. Of the amount released in 2019, 5,069 pounds were released to land, 8 pounds to air, and 3 pounds to water.

N,N-dimethylformamide had the second highest reported amount of on-site release of a probable carcinogen, with 4,499 pounds for 2019, all of which was released to air. Rohm and Haas Buildings 2, 3, and 8 reported the highest release, accounting for 99.3% of the total.

Trichloroethylene (TCE) reported by HandyTube was the third highest release of a probable carcinogen with 4,420 pounds reported as released to air. On-site releases of this chemical have increased by 3,107 since 2018. However, TCE releases have trended downward from 1995-2019, declining by 84.9%, down from 29,332 pounds reported for 1995 to 4,420 pounds for 2019.

The probable carcinogen on-site release total increased by 4,622 pounds (45.6%) for 2018-2019 and is now at 14,761 pounds, 27.6% of the 1998 amount. The increase in the probable carcinogen total for 2019 was due largely to the addition of N,N-dimethylformamide to the EPA's list of TRI reportable carcinogens.

Possible Carcinogens

This category has the most chemicals and number of reports, encompassing 41.5% of all on-site releases reported for carcinogens. About 99.9% of the total possible carcinogen amount is reported as released on-site to air, 0.1% to land, and 0% to water. The trend for 2019 is down by 52.4%, or 17,835 pounds from 2018; and down 92.7%, or 204,034 pounds, since 1998.

Styrene is the highest release in the possible carcinogen category for 2019, with reports totaling 11,178 pounds, all but 5 pounds to air. Justin Tanks reported 99.9% of the styrene releases for 2019, 11,166 pounds of styrene, all released to air; down 16.4% from 13,362 total pounds reported by Justin Tanks for 2018. The other facility reporting styrene releases was the Delaware City Refinery with 12 pounds. Total reported styrene releases for 2019 decreased by 2,196 pounds.

As before, in **Limitations of TRI Data** on Pages 4-5, we urge caution when using this data, as **the TRI data does not indicate the amount, if any, of human exposure**.

Trend Analysis

Effect of Chemical and Facility Group Additions, 1990-2019

Although the TRI program began with reporting for 1987, the next two years were marked with a change each year in the manufacturing, processing, and otherwise use threshold amounts. For 1987, the thresholds were 75,000 pounds for manufacturing and processing, and 10,000 pounds for otherwise use. For 1988, the thresholds were 50,000/10,000 pounds, and for 1989 and beyond, the thresholds were 25,000/10,000 pounds. It is not possible to make a meaningful comparison of trends during this time, as the number of facilities and the number of reports varied because of the changing reporting criteria.

Significant groups of chemicals and facilities were added to the TRI program:

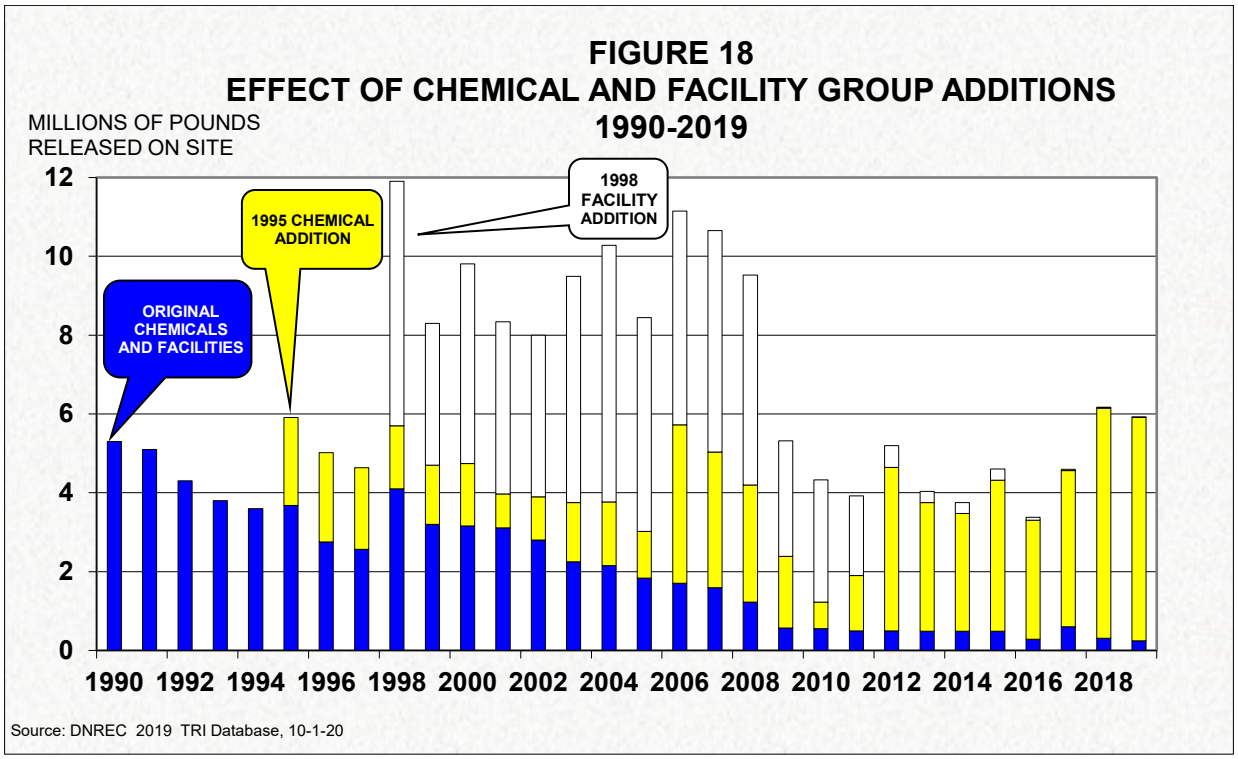
- **Chemical List Changes**
  For reporting year 1995 and beyond, the EPA significantly expanded the list of chemicals. The list increased by 282 chemicals and chemical categories, added to the original list of 238 chemicals. Of the 1995 chemicals added, the addition of nitrate compounds has resulted in the most significant increases in Delaware's release totals in recent years. Also during 1989-1995, other chemicals and categories were added or deleted, including chemical categories which are highly persistent and bioaccumulative in the environment (PBTs), bringing the total chemical count for 1995 to 581 and the chemical category count to 30. See details on the PBT chemical reports starting on page 21, and in Appendix I.

  Other additions to the chemical list have occurred over time, including recently. In the 2011 reporting year, 16 new carcinogens, four of which are in the polycyclic aromatic compounds (PAC) category, were added to the list of reportable chemicals. For 2012, Hydrogen Sulfide was added to the list of reportable chemicals. Hydrogen Sulfide reports increased on-site treatment reported amounts by 329 million pounds in 2012 and is discussed in greater detail in ***On-site Waste Management Trends*** on page 38. In more recent changes, the EPA added the a nonylphenol category to the list of TRI reportable chemicals for the 2015 reporting year, 1-bromopropane for the 2016 reporting year, a hexabromocyclododecane chemical category for the 2017 reporting year, and a nonylphenol chemical category for the 2019 reporting year. These additions bring the total chemical count to 595 listed chemicals and 34 chemical categories. Also, starting with the 2017 reporting year, nine existing TRI chemicals were added to the list of carcinogens; three existing chemicals were added to the list of carcinogens for the 2019 reporting year; and two more existing TRI chemicals will be added to the list of carcinogens for the 2020 reporting year.

Industry Expansion - 1998

Beginning with the 1998 reporting year, the EPA added seven industries to the list of facilities covered under TRI. Prior to the 1998 reporting year, only manufacturers (and Federal facilities) were required to report (see Table 1 on page 3). The greatest impact to Delaware is the Electric Utilities (NAICS 221). The industry expansion significantly increased the amount of reported releases. This did not necessarily represent an increase in toxic releases in Delaware, but rather provided additional information to the public. Other smaller groups as noted above, or even individual chemicals, are also added or deleted over time.

Figure 18 shows these effects starting in 1990 and following the trend of each group since it was added to the TRI program. Data from the beginning of the TRI program in 1987-89 is excluded because reporting requirements changed significantly and a valid comparison of that data with later data is not feasible.



The trend of each group and the reports affecting the trends will be discussed in this Trend Analysis section. All groups have changed over time, with increases and decreases reflecting both changes in business conditions and improvements in analysis. Table 12 shows the amount reported in millions of pounds for each group at the time it was added, the 2019 reported amount, and the amount of change since the time it was added. If each group had remained constant at the time of its addition, amounts reported for 2019 would be 13.73 million pounds instead of the 5.92 million pounds actually reported for 2019. Due to several factors, including facility efforts to reduce pollution, increased regulation, partial or complete shutdown of facilities, and declining business conditions, the reporting facilities in Delaware have effected a reduction of 7.81 million pounds, or 57%.

TABLE 12
TREND OF ON-SITE RELEASES FOR CHEMICAL AND FACILITY ADDITIONS

GROUP	STARTING YEAR AMOUNT Millions of Pounds	2019 AMOUNT Millions of Pounds	CHANGE SINCE STARTING Millions of Pounds	PERCENT CHANGE
Original Facilities and Chemicals	5.30	0.24	-5.06	-95%
1995 Chemical Addition	2.23	5.67	3.44	154%
1998 Facility Addition	6.20	0.02	-6.18	-100%
TOTAL	13.73	-57%	-7.81	-57%

TABLE 13
2009-2019 TRI DATA SUMMARY
(IN POUNDS)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
No. of Facilities	63	61	63	60	62	57	59	59	55	60	59
No. of Form As	29	31	34	33	33	31	31	33	28	29	24
No. of Form Rs	227	197	209	202	195	177	189	176	163	166	163
No. of Chemicals	90	79	90	88	91	88	90	85	82	84	82
On-Site Releases											
Air	3,194,221	3,519,986	2,416,526	1,109,209	998,934	805,127	712,043	546,310	746,669	739,722	521,593
Water	1,590,679	600,479	1,230,737	3,777,904	2,881,902	2,931,067	3,862,398	2,812,016	3,823,135	5,416,033	5,396,564
Land	537,489	210,747	278,669	306,702	151,956	17,910	29,078	22,011	24,076	14,037	6,555
Unadjusted On-Site Release	5,322,389	4,331,212	3,925,932	5,193,815	4,032,792	3,754,104	4,603,520	3,380,338	4,593,879	6,169,792	5,924,712
Off-site Transfers											
POTWs	636,602	996,970	1,048,588	814,866	935,842	934,025	1,035,534	997,109	956,919	940,287	835,843
Recycle	5,367,592	5,662,694	8,027,133	9,383,706	9,009,366	7,384,097	6,805,511	7,249,685	8,876,457	9,126,594	5,922,986
Energy Recovery	2,330,189	1,857,131	2,110,293	2,556,954	1,874,068	2,005,555	1,968,891	1,612,951	1,679,546	1,210,933	902,596
Treatment	140,248	336,190	274,727	963,123	1,112,090	314,129	229,453	256,899	117,153	190,320	288,272
Disposal	2,785,524	4,563,328	2,307,186	2,419,683	1,571,572	2,356,053	1,612,829	561,263	373,297	187,375	214,772
Unadjusted Total Transfers	11,260,156	13,416,312	13,767,928	16,138,331	14,502,937	12,993,859	11,652,217	10,677,907	12,003,373	11,655,509	8,164,469
On-Site Waste Mgmt.											
Recycle	5,630,119	7,678,337	7,974,584	9,326,213	11,642,121	11,636,106	10,756,074	11,859,042	9,712,512	10,725,721	10,280,608
Energy Recovery	14,670,034	-	9,172,883	16,227,012	15,659,902	15,930,970	15,963,550	12,727,241	12,475,029	13,854,373	11,693,251
Treatment	38,179,139	32,895,795	38,585,960	376,100,649	375,430,183	470,213,664	397,416,374	361,034,681	396,084,447	471,442,723	363,654,274
Unadjusted Total On-Site Mgmt.	58,479,292	40,574,132	55,733,427	401,653,874	402,732,206	497,780,740	424,135,997	385,620,964	418,271,988	496,022,818	385,628,133
Total Waste	75,061,836	58,321,655	73,427,286	422,986,019	421,267,934	514,528,704	440,391,734	399,679,208	434,869,240	513,848,119	399,717,314

NOT ADJUSTED FOR CHANGES IN REPORTING REQUIREMENTS

SOURCE: DNREC 2019 DATABASE, OCTOBER 2020

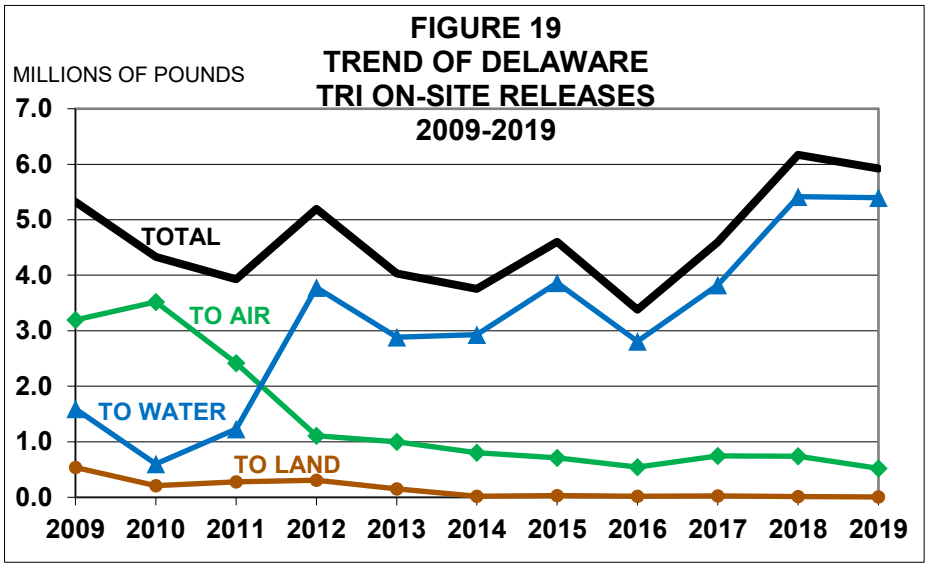
Release and Waste Management Trends, 2009-2019

Table 13 on page 32 shows amounts reported for each of the last 10 years. Earlier data is available back to 1987, the first year of the TRI program. Changes in reporting requirements over time have caused an increase both in the total number of chemicals and in the total number industries that are subject to reporting. Significant changes to the TRI reporting requirements occurred in 1995, 1998 and 2000, when large increases in chemicals (1995), industries subject to reporting (1998), and reductions in PBT thresholds (2000) occurred. The 2012 reporting year marked the addition of hydrogen sulfide to the list of reportable chemicals. Comparison of this data with earlier data must be done carefully, as some chemicals and/or industries may not have been required to report over the entire time.

The analysis presented in this section uses 2009 as a base year for presenting trends for all reportable chemicals and facilities. Sections covering on-site releases and off-site transfers are **not adjusted** for any changes in reporting requirements. However, in the on-site releases section, further analysis is presented on on-site releases, showing the impact of the Delaware City Refinery on the overall releases using 2015 as a base year. The on-site management section discusses the impact of the addition of hydrogen sulfide to the list of reportable chemicals.

On-Site Releases, 2009-2019

Figure 19 shows the on-site release trends during 2009-2019. On-site releases include emissions to the air, discharges to bodies of water and releases at the facility to land, including on-site landfills. On-site release amounts decreased by 4% for 2019 (245,080 pounds) following a 34.3% increase (1,575,913 pounds) for 2018.



Significant changes in the amounts reported for 2018-2019 include the facilities and chemicals shown in Table 14 on the next page. To put the changes in perspective for 2019, there were 58 reports with a higher amount, 82 reports with a lower amount, and 47 reports with no reported change from the 2018 amount. There were 3 reports with an increase greater than 10,000 pounds and 8 reports with a decrease greater than 10,000 pounds.

TABLE 14
REPORTS OF MAJOR CHANGES IN ON-SITE RELEASES FOR 2019 FROM 2018

FACILITY	CHEMICAL	MEDIA	CHANGE IN ON-SITE RELEASES (pounds)
Delaware City Refinery	Sulfuric Acid	Air	-175,073
Delaware City Refinery	Nitrate Compounds	Water	-127,242
Formosa	Vinyl Chloride	Air	-22,741
Mountaire Farms of DE	Ammonia	Air	+33,800
Perdue Georgetown	Nitrate compounds	Water	+98,063

Some of these changes (higher or lower) may have been caused by normal year-to-year variations in production levels at the facility, or by the chemical content of raw materials. Some changes may also have been caused by improvements in the way facilities estimate amounts. These changes are the primary reasons for the reductions and increases in the totals for 2018-2019. Changes are also discussed in the **Facilities No Longer Reporting Section** on page 20. Facility specific information is available via the **2019 TRI Facility Profiles,** see **Access to TRI Files** under the **Further Information Section** on page 48. In addition, you may contact a facility for a more in-depth discussion of the reasons for specific changes, and consult the appendices in this report for the exact amounts that were reported.

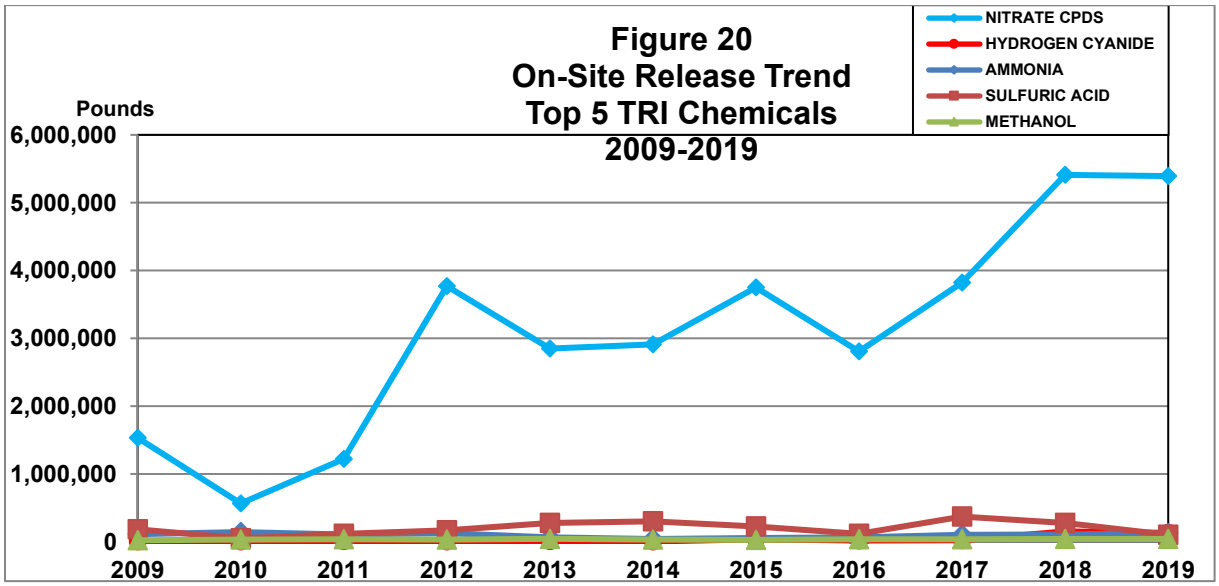
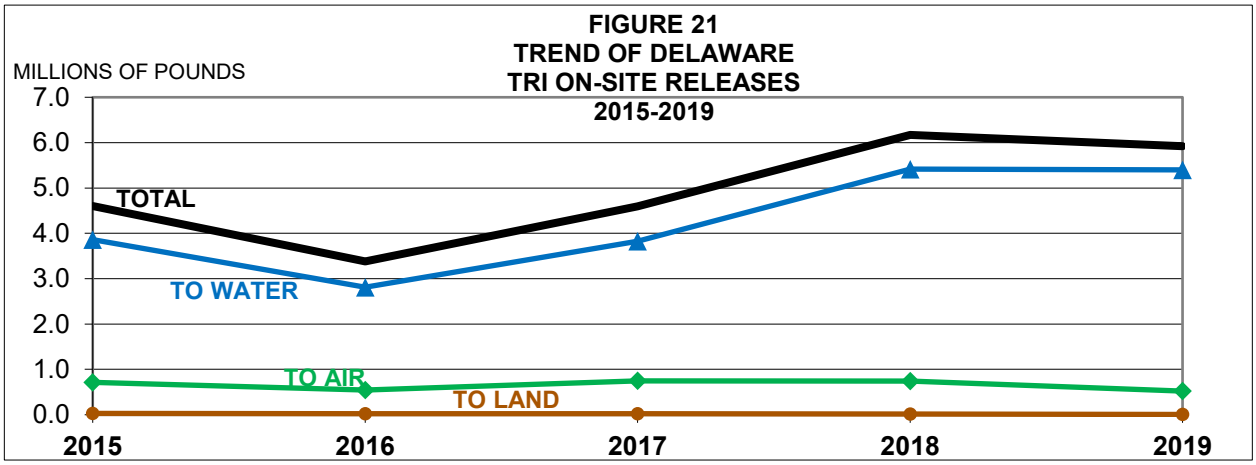
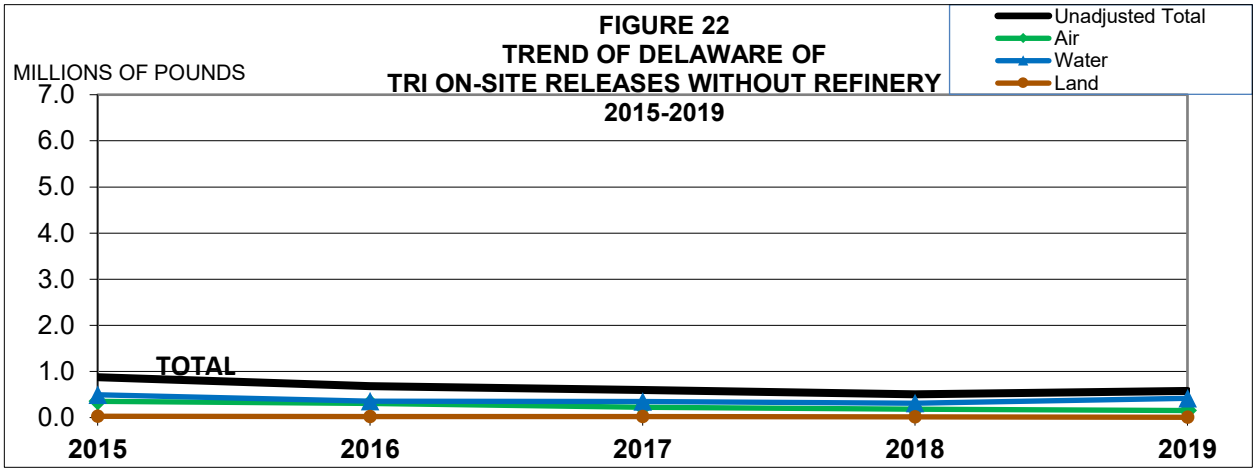


Figure 20 shows the trend since 2009 for the top five chemicals based on on-site release amounts reported for 2019 in Delaware. These five chemicals represent 97.7% of all on-site releases from the 82 chemicals reported in 2019. Nitrate compound releases trended downward for 2009 and 2010, when the Delaware City Refinery was in the process of shutting down and preparing to be sold. From 2010 through 2012, nitrate compound releases trended

upward with the Refinery coming back online and being in full operation. Nitrate compound releases accounted for 91% (5.4 millions pounds) of all on-site releases in 2019. Hydrogen cyanide ranked second in on-site releases, accounting for 2.2% of the total. The Delaware City Refinery released 100% of the hydrogen cyanide reported to air in 2019, down 15.8% since 2018, with past release amounts varying year to year, and with 2018 amounts being the highest. Ammonia ranked third in on-site releases, accounting for 2.1% (124,989 pounds). Sulfuric acid ranked fourth in on-site releases, accounting for 1.7% (101,050 pounds), down significantly (173.6%) since 2018. Sulfuric acid releases trended downward for 2009 and 2010, then trended upward from 2010 to 2014 with the Delaware City Refinery coming back online, with 2019 being the lowest except for the 2010 Refinery shutdown year. Methanol ranked fifth, and accounted for 0.7% of the total in on-site releases. BASF accounted for 81% of the total on-site releases for methanol, which were down 2.8% over 2018, with the total releases of methanol varying small amounts in recent years.

Figure 21 shows the on-site releases to air, water and land over the last 5 reporting years from 2015 through 2019. As the figure depicts, total releases mirror the trend of releases to water. This is due to nitrate compounds reported as released to water by the Delaware City Refinery, which accounted for 83.9% of all onsite releases in 2019. Figures 21 and 22 provide a side by side comparison showing the impact the Refinery has on the overall on-site releases. Figure 22 shows all other on-site releases, with the releases of the Delaware City Refinery removed. Onsite releases reported from all other facilities have dropped by 33.7% (295,396 pounds)

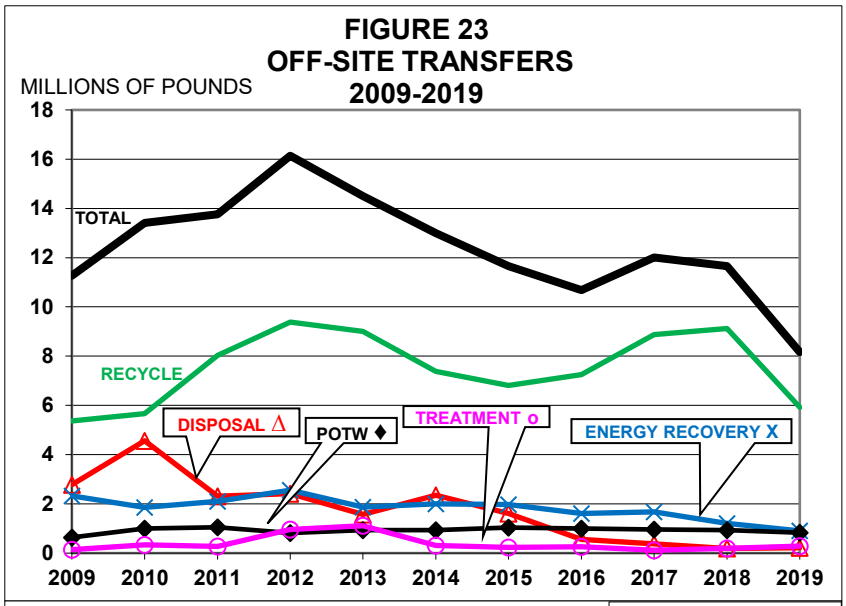


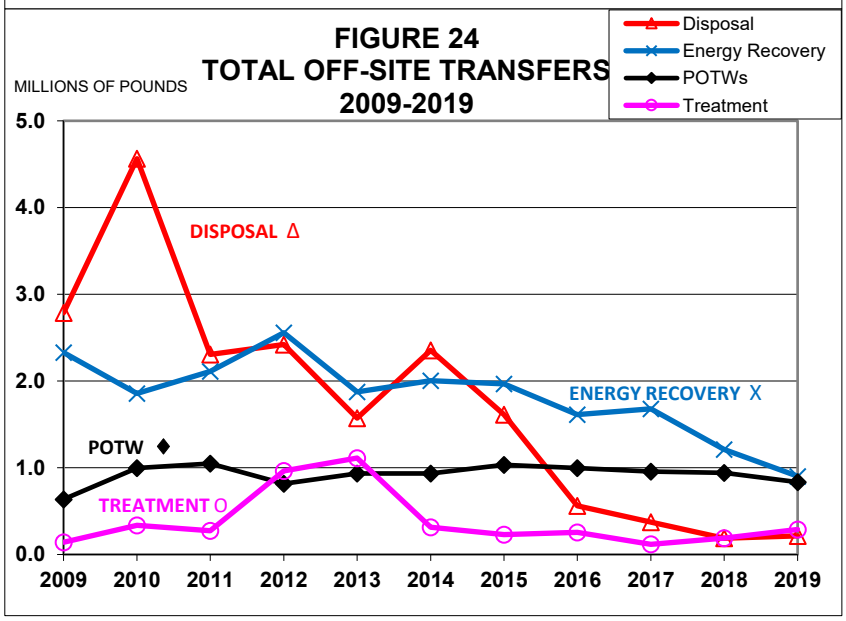


since 2015; while total on-site releases, with the Refinery releases included, are up by 28.7% (1,321,192 pounds) compared to 2015. One reason for the decrease in on-site releases, excluding the Delaware City Refinery, is the economy, which effects production at the facilities. Ultimately many of their on-site releases have declined in recent years and indirectly caused part of the reduction. Another potential reason is the shifting nature of industry in Delaware.

Off-Site Transfers, 2009-2019

An off-site transfer is a transfer of toxic chemicals as wastes to another facility that is physically separate from the reporting facility and may even be out-of-state (see page 11 for more information on off-site transfers). Chemicals are reported as transferred to an off-site facility when they are transported away from the reporting facility for the purposes of treatment at a publicly-owned treatment works (POTW, typically a waste water treatment plant), recycle, disposal, energy recovery, or non-POTW treatment facility. Although the off-site transfers may be of less immediate local concern than on-site releases, the transfers to POTWs, treatment, and disposal facilities still represent toxic chemicals as wastes that must be ultimately accounted for.





As noted on page 11 and seen in Table 13 on page 32, the amounts reported as transferred off-site are about 1.4 times greater than the amounts of on-site releases. Figures 23 and 24 show the trends in amounts of TRI chemicals in wastes transferred off-site for all facilities and chemicals reporting since 2009. To increase clarity, the lower portion (0 - 5 million pounds) of Figure 23 is expanded in Figure 24. For comparison, please look at the

corresponding values in Table 13 on page 32. Off-site transfers decreased 30% (3,491,040 pounds) in 2019, driven by decreases in amounts sent off-site for recycling and energy recovery, and transfers to POTW's; and offset partially by increases in off-site transfers for treatment and disposal.

Table 15, below, shows that the top two off-site transfer decreases were for lead compounds sent off-site for recycling by Clarios (formerly known as the Johnson Controls Battery Plant and Distribution Center). The third largest decrease reported was for off-site energy recovery of N,N-dimethylformamide by Rohm and Haas B2, B3, B8. The largest increases in off-site transfers was for methanol sent for recycling by BASF. Sixty-one reports showed decreases, while 50 reported increases in off-site transfers for 2019.

TABLE 15

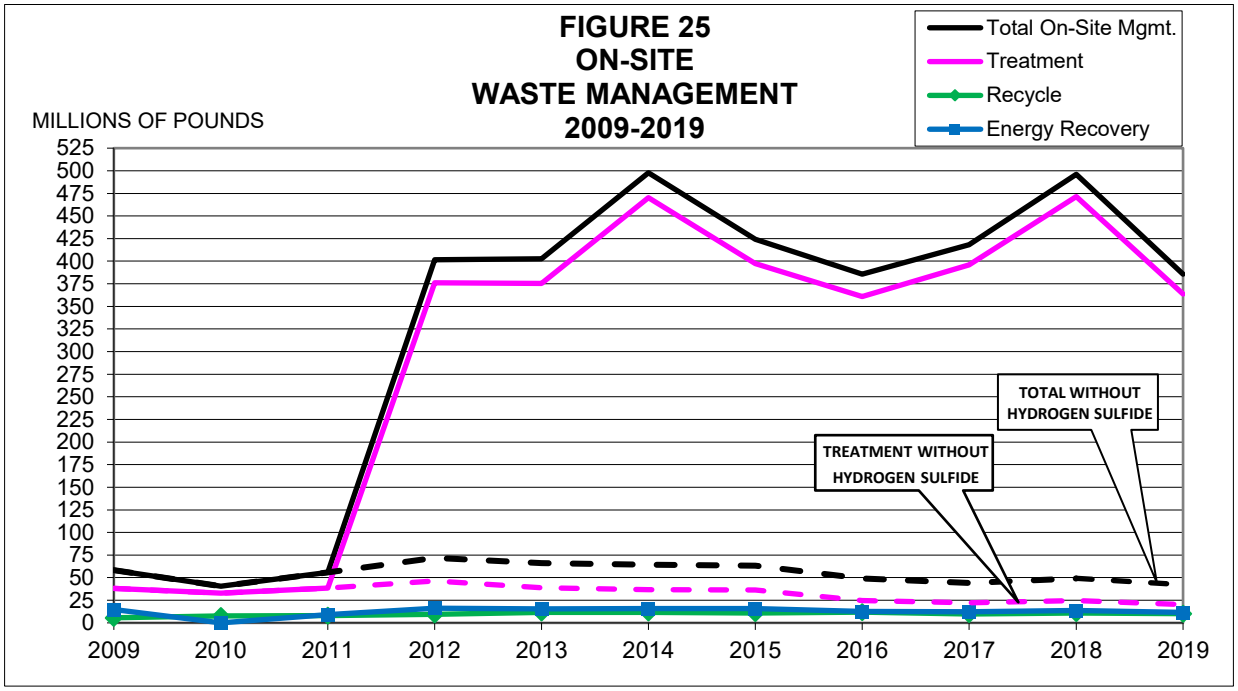
MAJOR CHANGES IN OFF-SITE TRANSFERS FOR 2019 FROM 2018

FACILITY	CHEMICAL	OFF-SITE METHOD	CHANGE (pounds)
Clarios Battery Plant	Lead Compounds	Recycle	-2,800,700
Clarios Distribution Center	Lead Compounds	Recycle	-1,084,195
Rohm & Haas - B2 B3 B8	N,N-Dimethylformamide	Energy Recovery	-158,962
BASF	Biphenyl	Energy Recov. + Treatment	-103,758
Baltimore Aircoil	Chromium Compounds	Recycle	+110,966
Baltimore Aircoil	Nickel Compounds	Recycle	+176,973
BASF	Methanol	Recycle	+494,671

On-Site Waste Management, 2009-2019

At some facilities, wastes are managed on-site instead of being sent off-site for processing or disposal. On-site waste management (recycling, recovery for energy, or treatment at the facility) is the processing of chemicals in wastes that do not leave the site of the reporting facility. Although these amounts represent a loss of raw materials and/or finished product to the facility as waste, they are not as much of a threat to the environment as the on-site release categories; since these amounts are treated or recycled and not disposed of or released to the on-site environment. There may be, of course, the risk that these chemicals may be accidentally released on-site to the environment during the waste management process. Also, most waste management operations are not 100% efficient, so a portion of the waste being treated in these operations could be released on-site and must be accounted for in the on-site releases reported by the facility.

Figure 25 below shows the trends for the three on-site waste management activities since 2009. Overall, on-site waste management amounts decreased 22.3% (110,394,684 pounds) in 2019 compared to 2018. The on-site management of hydrogen sulfide accounted for 89% (343,402,445 pounds) of all on-site waste management activities, with the Delaware City Refinery treating the largest amount at 343,194,315 pounds. As noted on page 30, the addition of Hydrogen Sulfide to the list of reportable chemicals resulted in a 329 million pound increase in on-site treatment amounts reported for 2012.



The Delaware City Refinery is the only facility in the state that reports on-site energy recovery, which is part of its air pollution control activities. On-site energy recovery was down 15.6% (2,161,122 pounds) compared to 2018, with the refinery reporting ammonia as having the largest decrease in energy recovery compared to 2018.

The largest changes reported in on-site waste management for 2019 are:

TABLE 16

MAJOR CHANGES IN ON-SITE WASTE MANAGEMENT FOR 2019 FROM 2018

FACILITY	CHEMICAL	ON-SITE WASTE MANAGEMENT METHOD	AMOUNT OF CHANGE (pounds)
Delaware City Refinery	Hydrogen Sulfide	Treatment	-103,285,244
Delaware City Refinery	Carbonyl Sulfide	Treatment	-2,323,050
Delaware City Refinery	Ammonia	Energy Recovery	-2,195,115
Delaware City Refinery	Carbon Disulfide	Treatment	-1,874,267
Air Liquide	N-Hexane	Recycle	-1,048,229

These changes were balanced by smaller increases and decreases from other reports. Thirty-six reports showed a decrease in a waste management amount, while 28 reports showed an increase for 2019. Total pounds for on-site waste management, excluding the addition of hydrogen sulfide, have decreased by 16.3 million pounds, or 27.8%, over the last 10 years or since 2009. The on-site waste management amount totals are in Table 13 on page 32, and Figure 6 on page 12 shows the relative amounts.

Total Waste, 2009-2019

No trend is shown for total waste, as it would be dominated by on-site waste management, as shown in Figure 7 on page 13.

Receiving TRI Chemicals in Wastes

When a facility transfers TRI chemical waste off-site, these wastes go to a receiving facility. Table 17 shows the total amounts of TRI chemicals reported as sent to 14 Delaware facilities from both in-state and out-of-state TRI facilities for 2019. The DNREC TRI program does not receive reports from any out-of-state TRI facilities that transfer wastes into Delaware; this data was obtained from the EPA.

TABLE 17
SUMMARY OF REPORTED TRI TRANSFERS
TO DELAWARE FACILITIES
FROM OTHER TRI FACILITIES IN 2019

(IN POUNDS)

DELAWARE RECEIVING FACILITY	TOTAL TRANSFERS TO DELAWARE FROM DELAWARE TRI FACILITIES	TOTAL TRANSFERS TO DELAWARE FROM OUT-OF-STATE TRI FACILITIES	TOTAL TRANSFERS RECEIVED BY DELAWARE FACILITIES
BRIDGEVILLE WASTEWATER TREATMENT PLANT	60,339		60,339
CLEAN EARTH OF NEW CASTLE	64	1,380	1,444
DELAWARE CITY WASTEWATER TREATMENT PLANT	5		5
DIAMOND STATE RECYCLING CORP	380,590		380,590
DSWA CHERRY ISLAND LANDFILL	1,110		1,110
DSWA DELAWARE RECYCLING CENTER	0		0
DSWA JONES CROSSROADS LANDFILL	71		71
KENT COUNTY REGIONAL WWTF	315		315
MB RECYCLING		1,828	1,828
MIDDLETOWN-TOWNSEND-ODESSA TREATMENT PLANT	1		1
R & M RECYCLING LLC	40		40
SEAFORD WASTEWATER TREATMENT FACILITY	1,500		1,500
WASTE MANAGEMENT OF DELAWARE	5		5
WILMINGTON WASTEWATER TREATMENT PLANT	773,682		773,682
TOTAL TRI TRANSFERS REPORTED	**1,217,723**	**3,208**	**1,220,931**

Source: U.S. EPA 2019 Data November, 2020

The top receiving facility is the Wilmington Wastewater Treatment Plant, receiving TRI chemicals in wastewater from regional customers. Diamond State Recycling received the second highest amount, for recycling, from two facilities in Delaware. The Bridgeville Wastewater Treatment Plant received the third largest amount, from one Delaware customer. Seaford Waste Water Treatment Facility received the fourth highest amount, from one facility. These four receiving facilities accounted for over 99% of all TRI chemicals received in Delaware from all in-state and out-of-state TRI facilities. The size of these transfers to Delaware is only 15% of the total transfers shown in Table 13 on page 32, so more TRI waste goes out of the State than comes in.

Pollution Prevention/Reduction Programs in Delaware

Data for TRI reportable chemicals and other chemicals is becoming increasingly more available to the public. This data availability has focused public attention and awareness on the existence and quantity of these chemicals and on their management and possible reduction. Although EPCRA does not require a facility to reduce releases of chemicals reportable under its programs, many companies and facilities are aware of the public availability of the data in this and other EPCRA reports and have implemented programs to reduce or eliminate releases of these chemicals. These programs may take the form of efficiency improvements, reuse, recycle, energy and material recovery, or material substitutions. The benefits of these programs are reduced raw material and waste disposal costs and reduced risks associated with the toxic chemicals. Also, these reductions demonstrate corporate responsibility to the facility's neighbors and improve the corporate image with the public.

There are numerous programs within DNREC that impact the management of TRI chemicals through the issuance of permits or through other regulatory and non-regulatory activities. Most releases reported under TRI are also regulated through air emission, water discharge, and/or land disposal permits. Potential sources of toxics undergo technical reviews through which potential threats to the environment and to human health are reviewed and identified prior to issuance of a permit. For example, the Engineering and Compliance Branch in the Division of Air Quality enforces a provision in the Clean Air Act Amendments of 1990 that targets the control of hazardous air pollutants (HAPs). Nearly all HAPs are also reportable TRI chemicals. In addition, the Engineering and Compliance staff monitors TRI data to assess whether a facility complies with its air permits for TRI chemicals. Another example is the work performed by the Accidental Release Prevention (ARP) program. The ARP staff uses the TRI data to detect deficiencies at a facility that might result in an increased risk of an accidental release.

DNREC's Division of Air Quality has monitored ambient air quality at locations around the State. For more information, please refer to the Delaware Air Quality Report paragraph in the **For Further Information** section on page 48 of this report.

In 2006, Delaware promulgated 7 DE Admin Code 1146, Electric Generating Unit (EGU) Multi-Pollutant Regulation, to establish sulfur dioxide (SO_2), nitrogen oxides (NOx), and mercury (Hg) air emissions limitations for coal-fired and residual oil-fired EGUs located in Delaware. Within 7 DE Admin Code 1146 two phases of emissions limitations were established, with the first phase that became effective in 2009, and a more restrictive second phase of emissions limitations that became effective in January of 2013. Significant reductions in NOx, SO_2 and Hg emissions have been achieved by the Delaware EGUs subject to Delaware 7 DE Admin Code 1146, and full compliance with the regulation's more restrictive second phase emissions limitations for 2013 and related consent decrees have been achieved.

The reduction in NOx, SO_2, and mercury emissions is:

1. Reducing the impact of those emissions on public health;
2. Aiding in Delaware's attainment of the State and National Ambient Air Quality Standard (NAAQS) for ground level ozone and fine particulate matter;
3. Helping to address local scale fine particulate and mercury problems attributable to coal and residual oil-fired electric generating units;
4. Improving visibility and helping to satisfy Delaware's EGU-related haze obligations.

In order to promote pollution prevention (P2), the EPA has increased the prominence and accessibility of the P2 information reported in sections 8.10 and 8.11 of TRI Form R. Some companies reporting P2 information are now highlighted in the EPA's annual report: https://www.epa.gov/trinationalanalysis, and all P2 entries reported nationally are featured in the TRI P2 search tool: https://enviro.epa.gov/facts/tri/p2.html.

P2 data is also accessible at the corporate level through this tool. To learn more about this, visit: https://www.epa.gov/toxics-release-inventory-tri-program/pollution-prevention-p2-and-tri.

One Delaware facility that had a waste reduction success in 2019 was Hirsh Industries in Dover, who did not report TRI chemicals in 2019 because they fell below the reporting threshold. Hirsh produces a line of consumer durables including file cabinets, shelving units, and lateral filing systems. Hirsh has previously filed TRI reports for certain glycol ethers, which are components in the water based paints which were used in their painting process prior to 2019. In early 2019, Hirsh converted their painting operation to the use of powder paint, completely eliminating the certain glycol ethers released to air, which had reached a high of 35,500 pounds in 2016.

National Perspective

The national 2019 TRI data was recently released by the EPA. Placing the 2019 Delaware reports alongside the 2019 EPA data yields some rankings that provide a perspective for Delaware in the national TRI picture. Changes in the 2019 final national values because of report additions or revisions may change these rankings.

TABLE 18
RANKING OF ON-SITE RELEASES FOR SELECT STATES

State	Rank, Based on Pounds	Total On-Site Release (Pounds)	Rank, Based on Release Per Person	Rank, Based on Pounds Release Per Square Mile
Alaska	1	851,618,000	1	8
Nevada	2	332,619,000	2	1
Utah	3	195,747,000	3	5
Texas	4	158,684,000	27	24
Delaware	43	5,925,000	24	3

On-site release totals are to the nearest 1000 pounds.

This data shows that Delaware ranks 43nd in the nation in total on-site releases by state for all TRI chemicals. This is 0.2% of the total on-site release amounts nationwide. Rankings can also be based on other criteria. Because Delaware has a small population (#45) and area (#49), releases are spread over fewer people and a smaller area, increasing the ranking on a per-person or per-square mile basis. Although Alaska reports, by far, had the highest amount of on-site releases, this state only received 227 reports from 37 facilities, not many more than Delaware's 187 reports from 59 facilities. Alaska reports are largely from mining operations, with over 775 million pounds (91% of the state total) reported released on-site for just two

chemicals; lead compounds and zinc compounds.

Figure 26 shows the amounts of TRI on-site releases reported by four nearby states for 2015 through 2019. Of these five states, Pennsylvania reported the highest amount in on-site releases for 2019 at 31.7 million pounds, and Virginia reported the second highest at 27.4 million pounds. On-site releases for the region have generally trended downward over the 5 year span, although New Jersey's and Delaware's numbers have increased slightly. Overall on-site releases for the 5 states are down 14.3% (14.7 million pounds) compared to 2015.

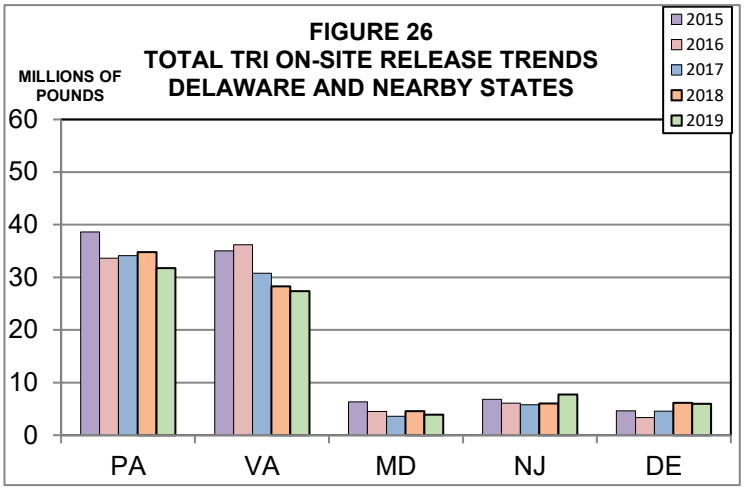


Table 19 compares releases from individual facilities nationally with releases from Delaware facilities. Nationally, 57 facilities had more **total on-site releases** than all the facilities in Delaware combined.

TABLE 19

SELECT FACILITY TOTAL ON-SITE RELEASES COMPARED TO DELAWARE

Facility, State	Rank	Total On-Site Release (Pounds) to the nearest thousand
Red Dog Operations, Alaska	1	769,233,000
Kennecott Utah Copper Mine, Utah	2	128,428,000
Nevada Goldstrike Mine, Nevada	3	125,553,000
All Facilities Combined, Delaware	Lower than #57	5,925,000

Sixty eight facilities each reported over 5 million pounds released on-site for 2019.

Nationwide, 154 facilities each released more **dioxins on-site**, based on Toxicity Equivalent Weight (TEQ), than all the facilities in Delaware combined. The TEQ differentiates between the highly toxic and the less toxic dioxins and dioxin-like compounds in this group. See pages 23-24 of this report for a further explanation of TEQ. Table 20 shows the top three facilities in the nation compared to the Delaware total on-site release of dioxins.

TABLE 20

COMPARISON OF DIOXIN TOTALS FOR TOP 3 FACILITIES TO DELAWARE TOTAL

Facility, State	Rank	Toxicity Equivalent Weight (TEQ) On-Site Dioxin Release (Grams)
US Magnesium, LLC, Utah	1	145.11
Chemical Waste Management, AL	2	63.75
Real Alloy Recycling, KY	3	11.89
All Facilities Combined, Delaware	Lower than #154	0.07

For 2019, 26 facilities reported more than one gram of TEQ on-site dioxin release.

Nationwide, 243 facilities each released more **mercury and mercury compounds on-site** than all the facilities in Delaware combined. Table 21 shows the top three facilities in the nation compared to the Delaware total on-site release of mercury.

TABLE 21

COMPARISON OF MERCURY TOTALS FOR TOP 3 FACILITIES TO DELAWARE TOTAL

Facility, State	Rank	Total On-Site Mercury Release (Pounds)
Nevada Gold Mines-Carlin South, Nevada	1	1,029,544
Nevada Gold Mines-Turquoise Ridge, Nevada	2	968,113
Nevada Gold Mines-Goldstrike Mine, Nevada	3	927,348
All Facilities Combined, Delaware	Lower than #243	129

Delaware ranks 18th among the states based on **total waste** reported to TRI. Table 22 compares **total waste** from individual facilities nationally with releases from Delaware facilities. Nationwide, 7 facilities each reported more **total waste** in their TRI reports than all of the facilities in Delaware combined.

TABLE 22

COMPARISON OF TOTAL WASTE FOR TOP 3 FACILITIES TO DELAWARE TOTAL

Facility, State	Rank	Total Waste (Pounds)
AdvanSix Resins & Chemicals, Pennsylvania	1	3,628,819,851
Sabic Innovative Plastics, Alabama	2	1,669,454,090
Sabic Innovative Plastics, Indiana	3	1,518,593,995
All Facilities Combined, Delaware	Lower than #7	399,717,314

Some facilities in Delaware do rank near the top of the national rankings for specific categories. Relevant national rankings for facilities in Delaware for on-site releases and total waste reported are presented in the **TRI Facility Profiles** (see **Access to TRI Files** under the **Further Information Section** on page 48).

Nearby Facilities in Adjacent States

Some facilities, although not located in Delaware, may be important to the environment in Delaware. These facilities are located near our border and may release TRI chemicals, particularly to the air or water, which may migrate into Delaware. Table 23 on the next page is a listing of some nearby facilities with significant TRI release amounts. This data is from EPA's preliminary 2019 TRI data set, which was gathered in October 2020.

TABLE 23

2019 On-Site Releases From Nearby Facilities in Adjacent States

Facility (and ID number for map on next page)	State	Chemical	Media	Amount (Pounds)
Chemours Chambers Works, Deepwater 1 ★	New Jersey	Nitrate compounds	Water	521,016
National Refrigerants, Rosenhayn 2 ★	New Jersey	Chloro-difluoromethane	Air	127,388**
Paulsboro Refining, Paulsboro 3 ★	New Jersey	Hydrogen cyanide	Air	248,237**
Paulsboro Refining, Paulsboro	New Jersey	Nitrate compounds	Water	1,170,761
Paulsboro Refining, Paulsboro	New Jersey	Sulfuric acid	Air	64,917
AdvanSix Resins & Chemicals, Philadelphia 4 ★	Pennsylvania	Cumene	Air	60,940**
AdvanSix Resins & Chemicals, Philadelphia	Pennsylvania	Phenol	Air	63,330**
PES Refinery, Philadelphia 5 ★	Pennsylvania	Benzene	Air	44,568**
PES Refinery, Philadelphia	Pennsylvania	Xylene	Air	31,006**
PES Refinery, Philadelphia	Pennsylvania	Sulfuric acid	Air	48,603
Arkema, Bristol 6 ★	Pennsylvania	Methyl Methacrylate	Air	33,750**
LSC Communications, Lancaster 7 ★	Pennsylvania	Toluene	Air	194,339**
Braskem America, Marcus Hook 8 ★	Pennsylvania	Propylene	Air	99,985**
Kimberly Clark, Chester 9 ★	Pennsylvania	Hydrochloric acid	Air	26,899**
Kimberly Clark, Chester	Pennsylvania	Sulfuric acid	Air	42,413
Monroe Energy, Trainer 10 ★	Pennsylvania	N-Hexane	Air	45,531**
Monroe Energy, Trainer	Pennsylvania	Xylene	Air	61,146**
Monroe Energy, Trainer	Pennsylvania	1,2,4-Trimethylbenzene	Air	52,392**
Grace Davison Curtis Bay Works, Baltimore 11 ★	Maryland	Ammonia Ammonia	Air Water	344,690** 29,795
Brandon Shores & Wagner, Baltimore 12 ★	Maryland	Sulfuric Acid	Air	29,935
Perdue Agribusiness, Salisbury ★	Maryland	N-Hexane	Air	311,712**
The Gill Corporation, Edgewood 14 ★	Maryland	Dichloromethane	Air	57,140***
The Gill Corporation, Edgewood	Maryland	Methanol	Air	31,520
Perdue Farms, Accomac 15 ★	Virginia	Hydrogen sulfide	Air	40,903**
Perdue Farms, Accomac	Virginia	Nitrate compounds	Water	178,787

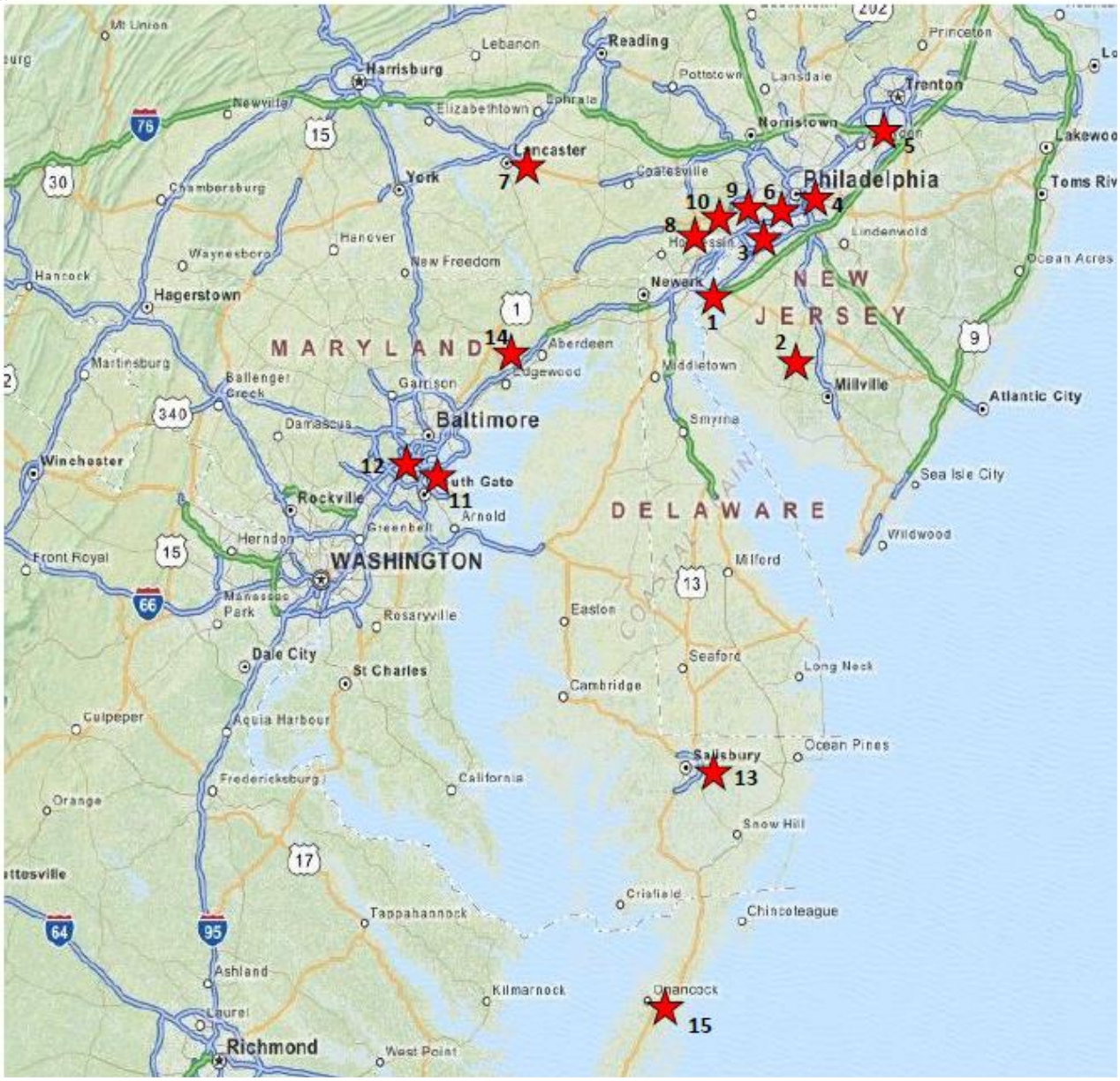
** Exceeds the Delaware State total for this chemical

*** Chemical not reported for 2019 in Delaware

As noted on pages 4-5, these amounts do not indicate the amount of human exposure. However, they do provide a comparison between releases in Delaware and some TRI chemicals released by nearby facilities in neighboring states.

Figure 27 shows the nearby facilities and their proximity to Delaware. Each star represents a facility location in the table above that reported an on-site release for a TRI chemical.

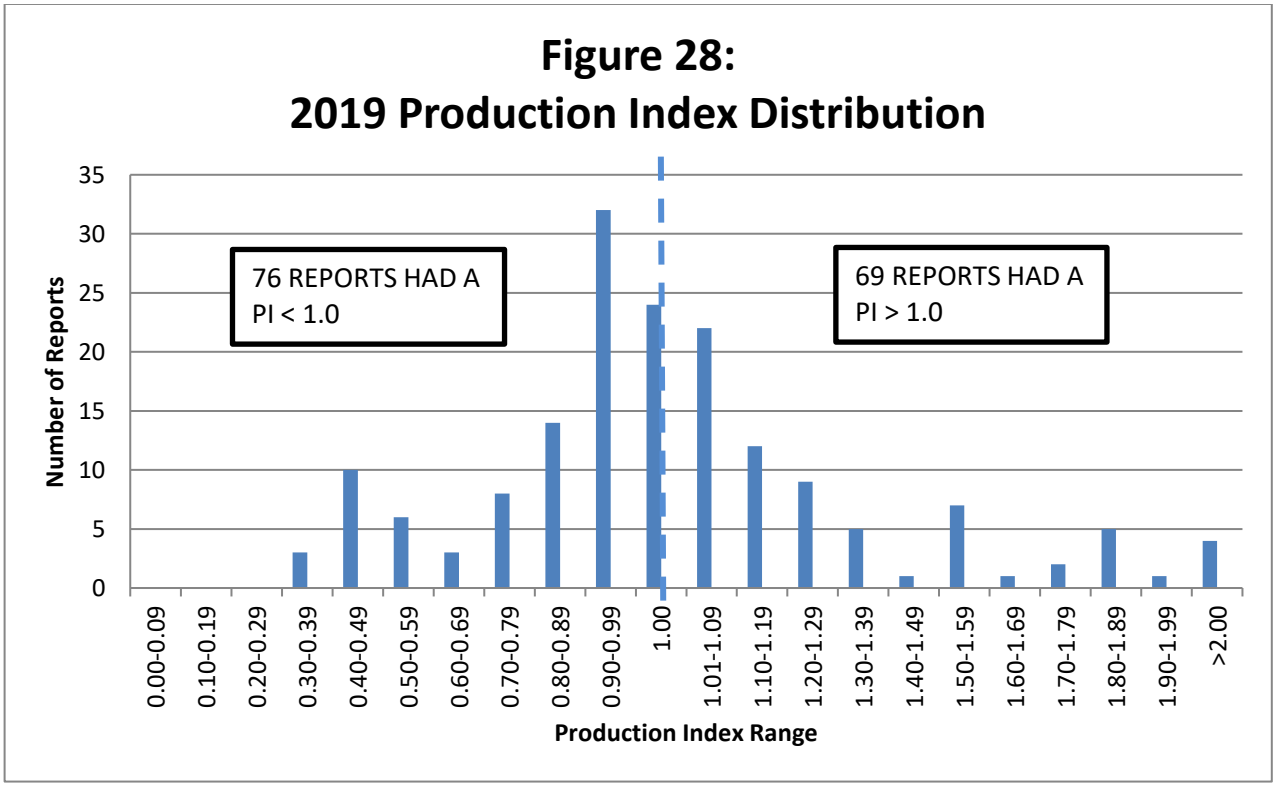
Figure 27
Facilities in Nearby States



TRI and the Economy

Facilities report a Production Index (PI) for each chemical. Along with TRI release and waste management data, this provides one way to estimate the impact of the economy, because the PI is the amount of production or activity directly associated with the demand for the chemical being reported. Some facilities, such as the power plants, can report the same PI for almost all of their chemicals, as they are directly related to the production of power. Other facilities, such as the ones in chemical manufacturing, report different PIs for different chemicals, as they are related more to the manufacture, process, or otherwise use of a specific chemical or line of chemicals. For some facilities, the determination of a PI is not precise, and therefore the PI may not be an exact indicator of production or chemical activity.

PI is reported as a number, representing the ratio of how production increased or decreased compared to the previous year. For example, a facility reporting an increase of 10% would report the PI as 1.10, while a facility reporting a decrease of 10%, would report the production as 90% of the previous year or a PI of 0.90. A facility having the same production level as the previous year would report the PI as 1.0. Figure 28 below, shows the distribution range of PIs reported. For 2019, of the 169 reports with PIs, 69 reported increases in production and 76 reported decreases. The remaining 24 reports had a 2019 production level equal to the previous year. The average PI reported was 1.1 or a 10% increase compared to 2018's production level. Form A TRI reports do not provide PI information, so only Form R reports are included here.



FOR FURTHER INFORMATION

Access to the TRI Files - DNREC is responsible for collecting, processing, and distributing information submitted by Delaware facilities under the TRI program. This 2019 TRI report may be viewed at: https://dnrec.alpha.delaware.gov/waste-hazardous/emergency-response/community-right-to-know/tri/. TRI Facility Profiles for each reporting facility in Delaware are also available at the same location.

Information on TRI and other EPCRA programs is located at: https://dnrec.alpha.delaware.gov/waste-hazardous/emergency-response/community-right-to-know/.

TRI data is also available on the State of Delaware's open data portal at this link: https://data.delaware.gov/Energy-and-Environment/Toxics-Release-Inventory/9bws-2xkb/data

Information in the TRI searchable data base and open data portal are updated at least once a year to reflect revised or withdrawn TRI reports from prior years. These data bases may also reflect revisions to 2019 TRI reports which were are not included in this report because they were received after October 1, 2020.

The information submitted by facilities is available for review through the Freedom of Information Act (FIOA) process from DNREC's EPCRA Reporting Program located at 155 Commerce Way-Suite B, in Dover. Custom reports can also be generated from the database. For information on placing a request, call the TRI Coordinator at (302) 739-9405 during business hours. An on-line FOIA application is also available at: https://dnrec.alpha.delaware.gov/foia/

Chemical Data Fact Sheets - A two-page fact sheet is available for most TRI chemicals reported in Delaware and contains information on chemical characteristics, health hazards, and ecological effects. The two-page fact sheets (ToxFAQ's) are available upon request from DNREC's TRI program or available through the Agency for Toxic Substances and Disease Registry (ATSDR) at: http://www.atsdr.cdc.gov/toxfaqs/index.asp or from the New Jersey Department of Health at: http://web.doh.state.nj.us/rtkhsfs/indexFs.aspx

EPA's TRI Home Page - The TRI home page provides information on the many facets of the TRI program at the EPA, including a mapping tool, Q&A's, a link now to the 2019 national TRI data, and early in 2021 to the complete 2019 national analysis, a current list of reportable chemicals, state and federal program contacts, and various guidance documents available for downloading. This website has many links to other EPA and non-EPA sites associated with TRI: www.epa.gov/tri/.

TRI Reporting Forms – Reporting instructions, reporting guidance, and examples of the traditional paper reporting forms are at: https://ofmpub.epa.gov/apex/guideme_ext/f?p=104:1

Toxics Release Inventory National Analysis - The EPA's annual TRI report. It covers national information and provides a good perspective on how Delaware compares to other states: https://www.epa.gov/trinationalanalysis. The 2019 edition of this report will be available in January of 2021. It can also be obtained by calling the Federal EPCRA Information Hotline at 1-800-424-9346. Other searchable database programs such as Envirofacts: https://enviro.epa.gov/ are EPA-developed programs that provide public access to multiple environmental databases, including TRI. Links are available at

http://www2.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools for data about hazardous waste, water permits, drinking water, Superfund sites, air, water, toxics, and more.

Chemical Reporting Rule – The EPA has issued the final Chemical Data Reporting (CDR) Rule. The purpose of this program is to collect information from manufacturers and importers of chemical substances and to make that information available for use by EPA. The rule was enhanced for 2012 reporting. More information can be found at: https://www.epa.gov/chemicals-under-tsca

Delaware Division of Public Health Cancer Rates and Causes - This site provides data and answers to many cancer-related questions: http://www.dhss.delaware.gov/dhss/dph/dpc/cancer.html

Searchable nationwide TRI data is available at: https://www.epa.gov/toxics-release-inventory-tri-program?utm_medium=email&utm_source=govdelivery#trisearch

The Office of Pollution Prevention & Toxics - (OPPT) is a part of the EPA that:

- Promotes pollution prevention as the guiding principle for controlling industrial pollution;
- Promotes safer chemicals through a combination of regulatory and voluntary efforts;
- Promotes risk reduction so as to minimize exposure to existing substances such as lead, asbestos, dioxin, and polychlorinated biphenyls; and,
- Promotes public understanding of risks by providing understandable, accessible and complete information on chemical risks to the broadest audience possible.

International "TRI". The United States Toxics Release Inventory (TRI), the oldest and most comprehensive Pollutant Release and Transfer Register (PRTR) system in the world, is one of several similar programs established, or being established, by countries around the world. Industrial facilities in these countries are required to report their emissions and other waste management of toxic chemicals to databases in their respective countries. These databases are designed to track the quantities of chemicals that are released to the air, land or water, or transferred to another site for recycle, treatment or disposal. The term used internationally for these TRI-like systems is Pollutant Release and Transfer Register (PRTR). The EPA has a web site for PRTR, and it is http://www2.epa.gov/toxics-release-inventory-tri-program/tri-around-world. There are now over 50 countries participating in PRTR programs, and links to several international environmental agencies and programs, with more being developed each year.

Delaware Air Quality Report - The annual air quality report is prepared by the Analytical Support Group in the Air Quality Management Section of DNREC. This report presents data gathered from a statewide network of air monitoring stations, and includes analyses, trends, and other information regarding Delaware's ambient air quality. For more information, please call (302) 323-4542. This report is available on-line at: https://dnrec.alpha.delaware.gov/air/quality/monitoring/

Delaware's Department of Natural Resources and Environmental Control has a variety of environmental information, publications and reports. Environmental Databases are available at: https://dnrec.alpha.delaware.gov/online-applications/. Notifications of releases in Delaware can be found at: Delaware Environmental Release Notification System (DERNS).

Other Delaware EPCRA Information - In addition to TRI, there are other provisions of the Emergency Planning and Community Right to Know Act (EPCRA), which provide information to the public as well as to local emergency planning and response organizations. Delaware has its own EPCRA statute, which established these provisions under State law. For additional information, visit: https://dnrec.alpha.delaware.gov/waste-hazardous/emergency-response/community-right-to-know/data-information/.

Questions or comments regarding the TRI program are welcome. Please direct questions, comments, or requests to:

Debra Nielsen
TRI Coordinator
EPCRA Reporting Program
Prevention and Preparedness Branch
Emergency Response and Strategic Services Section
DNREC Division of Waste and Hazardous Substances
155 Commerce Way, Suite B
Dover, DE 19904
Tel. (302) 739-9405
E-mail: debra.nielsen@delaware.gov

APPENDICES

2019

APPENDIX A

WHAT IS COMMUNITY RIGHT-TO-KNOW?

TOXICS RELEASE INVENTORY

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

A dramatic and fatal accident involving the release of a large quantity of methyl isocyanate gas occurred in Bhopal, India on December 3, 1984. As a result of this release and similar, although less tragic, accidents that occurred in the United States, Congress enacted the Emergency Planning and Community Right to Know Act (EPCRA), as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986. EPCRA requires certain facilities to report information about hazardous chemicals and substances at their facilities to Federal, state, and local authorities. The objective is to improve the ability of the facility and of local emergency response agencies to plan for and respond to chemical emergencies, and to give citizens information about chemicals present in their communities. Presidents have also issued Executive Orders to Federal agencies, which mandate their compliance with certain EPCRA requirements. In 1991, Delaware established its own EPCRA legislation that enhanced the Federal requirements.

EMERGENCY PLANNING

Each state was required to establish a State Emergency Response Commission (SERC) to oversee planning efforts. The SERC must appoint Local Emergency Planning Committees (LEPC), which in turn develop emergency response plans for their respective districts. In Delaware, the SERC is chaired by the Secretary of the Department of Public Safety. Emergency planning districts have been established in each county and for the City of Wilmington. Facilities having specifically identified Extremely Hazardous Substances above established threshold quantities are required to notify their LEPC. These facilities are the primary focus of planning activities.

EMERGENCY RELEASE NOTIFICATION

In the event of an accidental chemical release above an established amount, a facility is required to provide immediate notification of the release. A follow up written report is also required to provide details about the sequence of events, the actual response actions, and to identify any known or anticipated health risks associated with the release. The public may receive notification through the Environmental Release Notification System.

In response to Senate Bill 33, which became law in July 2001, the Department of Natural Resources and Environmental Control (DNREC) developed a system to allow Delawareans to learn promptly of releases or discharges of contaminants or pollutants that meet or exceed certain thresholds in their neighborhoods or throughout the state. When you register, you choose to be notified in one of three ways: By phone, by e-mail or by fax. You also can choose to be notified about releases from specific facilities or about all releases that occur in one or more zip codes throughout the state. Interested individuals may register for notification at: http://apps.dnrec.state.de.us/derns/pub/.

HAZARDOUS CHEMICAL REPORTING

Under U.S. Occupational Safety and Health Administration (OSHA) regulations, facilities are required to maintain a Safety Data Sheet (SDS) for each chemical on site. Under EPCRA, facilities are required to submit a list of their SDSs for hazardous chemicals on site above specific threshold amounts. This list must be updated as new chemicals are brought on site. In addition, facilities having such chemicals are required to file Hazardous Chemical Inventory Reports annually. These reports, also known as Tier II forms, can be filed on-line using Tier II Manager™ and data is available immediately for use by the EPCRA Reporting Program and

emergency planning and response agencies. The data provides information on the identity, hazards, amounts, and locations of reportable chemicals at the facility, as well as emergency contacts, and a site plan.

Fees are also collected based on the number and type of chemicals reported. The fees are primarily used to support operations of the LEPCs.

TOXICS RELEASE INVENTORY (TRI) REPORTING

Facilities covered under TRI are required to file annual reports contain on-site releases, off-site transfers, and on-site waste management activities related to their use of certain toxic chemicals. These reports can be filed electronically at the same time to EPA and DNREC using EPA's TRI-ME (TRI Made Easy) program. This data is compiled and made available to the public through this report and other means. For more information regarding TRI, please refer to the **Introduction** and **What is the Toxics Release Inventory?** sections contained in this report.

RISK MANAGEMENT PLANS

Additional information regarding hazardous chemicals is available to the public due to the requirements contained in Title I, Section 112(r) of the Federal Clean Air Act Amendments of 1990. Section 112(r) requires that facilities handling substances with catastrophic potential submit a Risk Management Plan (RMP) that contains an executive summary, registration, off-site consequence analysis (OCA), five-year accident history, and a summary of their prevention and emergency response programs. The OCA consists of a "worst case" release scenario and an "alternative" release scenario. The "worst case" scenario estimates the area and populations affected by a catastrophic release. The 'worst case" scenario is a hypothetical, conservative modeling exercise. Emergency planners use the toxic "alternative" scenario as a more realistic modeling exercise.

The information contained in the RMP builds upon the right-to-know principles of EPCRA by making all of the information including the OCA and five-year accident history available to local communities, emergency planners, and other stakeholders. Concerned citizens or the media may ask facilities to explain the risk management programs that they use to prevent or minimize the consequence of a catastrophic release. EPA encourages this communication to reduce the risk. This is similar to the way public knowledge of chemical releases to the environment through the availability of TRI data has led reporting facilities to reduce their toxic releases. Because of security concerns, the RMP information is restricted. However, this information is available for Delaware facilities by contacting:

The Accidental Release Prevention Program (ARP) https://dnrec.alpha.delaware.gov/waste-hazardous/emergency-response/accidental-release-prevention/
or by contacting the EPA reading room at: https://www.epa.gov/libraries.

In Delaware, the Extremely Hazardous Substances Risk Management Act first passed in 1988, and amended in 1998, adopted new federal guidelines that enhance the community right-to-know information. The Delaware Accidental Release Program (ARP) has been granted full authority by the US EPA to administer the program within DNREC, reviews the facility RMPs for accuracy and completeness and inspects facilities to ensure that appropriate accidental release prevention programs have been implemented. For more information on accidental release prevention in Delaware, please refer to the DNREC ARP website above.

APPENDIX B

FACILITY CONTACT INFORMATION

AEARO TECHNOLOGIES
650 DAWSON DR
NEWARK, DE 19713
TOM FLAHERTY
(302) 286-2415

AGILENT TECHNOLOGIES
538 FIRST STATE BLVD.
NEWPORT, DE 19804
RENEE LEWANDOWSKI
(302) 636-3668

AIR LIQUIDE ADVANCED SEPARATIONS
305 WATER ST
NEWPORT, DE 19804
HARRISON ABINTEH
(302) 225-2137

ALLEN HARIM FARMS – SEAFORD MILL
20799 ALLEN ROAD
SEAFORD, DE 19973
MICHAEL SAUSE
(302) 684-1640

ALLEN HARIM FOODS - HARBESON
18752 HARBESON ROAD
HARBESON, DE 19951
MICHAEL SAUSE
(302) 684-1640

ALLEN HARIM FOODS - MILLSBORO
29984 PINNACLE WAY
MILLSBORO, DE 19966
MICHAEL SAUSE
(302) 684-1640

AMICK FARMS
10281 AMICK DRIVE
DELMAR, DE 19940
RICK MARTINSON
(302) 846-9511

BALTIMORE AIRCOIL
1162 HOLLY HILL RD
MILFORD, DE 19963
BRANDON MCLAREN
(302) 753-5909

BASF COLORS AND EFFECTS USA LLC
205 S JAMES ST
NEWPORT, DE 19804
ROBERTO NELSON
(973) 245-5230

CALPINE CORP. GARRISON ENERGY CENTER
450 GARRISON OAK DRIVE
DOVER, DE 19901
KARL BRENTON
(215) 337-6508

CLARIOS BATTERY PLANT
700 N BROAD ST
MIDDLETOWN, DE 19709
STEPHEN GARRETT
(260) 740-9336

CLARIOS DISTRIBUTION CENTER
50 PATRIOT DR
MIDDLETOWN, DE 19709
TAMI KEMSKE
(302) 696-3209

COLOR WORKS PAINTING
251 EDWARDS AVE
NEW CASTLE, DE 19720
TRAVIS O. HISTED
(302) 324-8411

CRODA
315 CHERRY LN
NEW CASTLE, DE 19720
CHRIS BARNETT
(302) 429-5320

APPENDIX B

FACILITY CONTACT INFORMATION

DELAWARE CITY REFINERY
4550 WRANGLE HILL RD
DELAWARE CITY, DE 19706
LISA LINDSEY
(302) 834-6033

DENTSPLY SIRONA MAIN PLANT
38 W CLARKE AVE
MILFORD, DE 19963-0359
COLBY LANDISS
(302) 422-4511

DENTSPLY SIRONA WEST PLANT
779 E MASTEN CIR
MILFORD, DE 19963-0359
COLBY LANDISS
(302) 422-4511

DOVER AFB
436 CES/CC 600 CHEVRON AVE
DOVER AFB, DE 19902
DAWNE NICKERSON-BANEZ
(302) 677-6575

DUHADAWAY TOOL AND DIE SHOP
801 DAWSON DRIVE
NEWARK, DE 19713
JOHN O'DONNELL
(302) 366-0113

EDGE MOOR/HAY ROAD ENERGY CENTERS
200 HAY RD
WILMINGTON, DE 19809
PATRICK BLANCHARD
(713) 830-8717

FUJIFILM
233 CHERRY LN
NEW CASTLE, DE 19720
MAUREEN CONCORDIA
(302) 472-1257

GAC SEAFORD
25938 NANTICOKE ST
SEAFORD, DE 19973
MICHAEL THRASHER
(813) 248-2101

HANDY TUBE
124 VEPCO BOULEVARD
CAMDEN, DE 19934
REBECCA REIMER
(302) 697-9521

HANOVER FOODS
ROUTE 6 & DUCK CREEK RD
CLAYTON, DE 19938
ALVIN CONSTANTINE
(302) 653-9281

HMA-HERITAGE CONCRETE - BEAR
1250 PORTER ROAD
BEAR, DE 19701
RICHARD FOREMAN
(717) 813-9990

HMA-HERITAGE CONCRETE - CHESWOLD
376 HOLLY OAK LANE
CHESWOLD, DE 19936
RICHARD FOREMAN
(717) 813-9990

HMA-HERITAGE CONCRETE – HEALD STREET
1100 HEALD STREET
WILMINGTON, DE 19801
RICHARD FOREMAN
(717) 813-9990

HMA-HERITAGE CONCRETE - MIDDLETOWN
734 DEXTERS CORNER ROAD
TOWNSEND, DE 19734
RICHARD FOREMAN
(717) 813-9990

APPENDIX B

FACILITY CONTACT INFORMATION

HONEYWELL
6100 PHILADELPHIA PIKE
CLAYMONT, DE 19703
RUSSELL W. DAVIS
(302) 791-6748

IKO
120 HAY RD
WILMINGTON, DE 19809
STEVEN HEYER
(302) 764-3100

INDIAN RIVER GENERATING STATION
29416 POWER PLANT RD
DAGSBORO, DE 19939
DAVE SCHRADER
(267) 295-5768

INTERVET
29160 INTERVET LN
MILLSBORO, DE 19966
ERIC SEWARD
(302) 934-4043

JUSTIN TANKS
21413 CEDAR CREEK AVE
GEORGETOWN, DE 19947-6306
EDWARD M. SHORT, PRESIDENT
(302) 856-3521

KUEHNE
1645 RIVER RD
DELAWARE CITY, DE 19706
ALAN ROGERS
(302) 834-4557

MESSER LLC
6000 PHILADELPHIA PIKE
CLAYMONT, DE 19703
DAVID REMNEK
(302) 290-7369

METAL MASTERS
100 INDUSTRIAL BLVD
CLAYTON, DE 19938
RICHARD J. MURPHY
(302) 653-3087

MOUNTAIRE FARMS - FRANKFORD
11 DAISEY ST
FRANKFORD, DE 19945
CATHERINE BASSETT
(302) 934-3050

MOUNTAIRE FARMS - SELBYVILLE
HOOSIER ST & RAILROAD AVE
SELBYVILLE, DE 19975
CATHERINE BASSETT
(302) 934-3050

MOUNTAIRE FARMS OF DELAWARE
29106 JOHN J WILLIAMS HWY
MILLSBORO, DE 19966
CATHERINE BASSETT
(302) 934-3050

NATIONAL GUARD TRAINING SITE RANGE
1197 RIVER ROAD
NEW CASTLE, DE 19720
MICHAEL ZAPPATERRINI
(302) 326-7488

NORAMCO
500 SWEDES LANDING RD
WILMINGTON, DE 19801
LUCAS ZUMSTEIN
(302) 888-6035

ORIENT CORP
111 PARK AVE
SEAFORD, DE 19973
DAVE CURRY
(302) 628-1300

OWEN STEEL COMPANY
813 S MARKET STREET
WILMINGTON, DE 19801
DAVID ZALESNE
(803) 251-7565

PERDUE BRIDGEVILLE
16447 ADAMS RD
BRIDGEVILLE, DE 19933
KENNETH SCHOCH
(410) 341-2083

PERDUE GEORGETOWN
20621 SAVANNAH RD
GEORGETOWN, DE 19947
KENNETH SCHOCH
(410) 341-2083

PERDUE MILFORD
255 N REHOBOTH BLVD
MILFORD, DE 19963
KENNETH SCHOCH
(410) 341-2083

PICTSWEET BRIDGEVILLE
18215 WESLEY CHURCH RD
BRIDGEVILLE, DE 19933
ALLEN WATTS
(731) 663-7600

PRINCE MINERALS
301 PIGEON POINT RD
NEW CASTLE, DE 19720
TOM HORTON
(302) 540-4526

ROGERS CORP
1100 GOVERNOR LEA RD
BEAR, DE 19701
TIMOTHY GAUTHIER
(860) 779-5598

ROHM & HAAS B2, B3, B8
451 BELLEVUE RD
NEWARK, DE 19713
PETER PALENA
(302) 366-0500

ROHM & HAAS B5, B6
351 BELLEVUE RD
NEWARK, DE 19713
PETER PALENA
(302) 366-0500

ROHM & HAAS B7, B15
50 BELLEVUE RD
NEWARK, DE 19713
PETER PALENA
(302) 366-0500

SIMMONS BRIDGEVILLE
8141 SEASHORE HWY
BRIDGEVILLE, DE 19933
JULIE MAUS
(479) 524-8151

SPI PHARMA
40 CAPE HENLOPEN DR
LEWES, DE 19958-1196
JOHN CREIGHTON
(616) 283-8506

TWINCO ROMAX
1 CROWELL ROAD
WILMINGTON, DE 19804
CHRIS SEAY
(302) 383-6295

V&S DELAWARE GALVANIZING
511 CARROLL DRIVE
NEW CASTLE, DE 19720
IONUT ROIBU
(302) 322-1420

APPENDIX B

FACILITY CONTACT INFORMATION

VEOLIA RED LION PLANT
766 GOVERVENOR LEA RD
DELAWARE CITY, DE 19706
DANIEL FRATTARELLI
(302) 834-5901

VP RACING FUELS
16 BROOKHILL DR
NEWARK, DE 19702-1301
SUSAN GRAY
(210) 635-7744

W. L. GORE
555 PAPER MILL ROAD
NEWARK, DE 19711
MATTHEW RENDON
(443) 566-2545

APPENDIX C

2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
AEARO TECHNOLOGIES LLC							
Diisocyanates	0	3	0	0	3	10,132	0
Toluene diisocyanate (mixed isomers)	0	5	0	0	5	1,477	0
AEARO TECHNOLOGIES LLC Total	**0**	**8**	**0**	**0**	**8**	**11,609**	**0**
AGILENT TECHNOLOGIES							
Acetonitrile	0	93	0	0	93	19,787	0
Methanol	0	1,879	0	0	1,879	54,532	0
Toluene	0	47	0	0	47	141,588	0
AGILENT TECHNOLOGIES Total	**0**	**2,019**	**0**	**0**	**2,019**	**215,907**	**0**
AIR LIQUIDE ADVANCED SEPARATIONS							
Cyclohexane	0	9,177	0	0	9,177	29,660	0
Methanol	0	5	0	0	5	94,507	2,983,147
N,N-Dimethylformamide	0	31	0	0	31	24,150	0
n-Hexane	0	29	0	0	29	5	1,348,798
N-Methyl-2-pyrrolidone	0	1,184	0	0	1,184	76,709	0
AIR LIQUIDE ADVANCED SEPARATIONS Total	**0**	**10,426**	**0**	**0**	**10,426**	**225,031**	**4,331,945**
ALLEN HARIM FARMS SEAFORD MILL							
Copper	1	0	0	0	0	0	0
Copper Compounds	1	0	0	0	0	0	0
Manganese	1	0	0	0	0	0	0
Manganese Compounds	1	0	0	0	0	0	0
Zinc Compounds	1	0	0	0	0	0	0
ALLEN HARIM FARMS SEAFORD MILL Total	**5**	**0**	**0**	**0**	**0**	**0**	**0**
ALLEN HARIM FOODS HARBESON							
Nitrate Compounds	0	0	73,217	0	73,217	0	0
Peracetic acid	1	0	0	0	0	0	0
ALLEN HARIM FOODS HARBESON Total	**1**	**0**	**73,217**	**0**	**73,217**	**0**	**0**
ALLEN HARIM FOODS MILLSBORO							
Peracetic acid	1	0	0	0	0	0	0
ALLEN HARIM FOODS MILLSBORO Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**

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APPENDIX C

2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
AMICK FARMS							
Copper Compounds	1	0	0	0	0	0	0
Manganese Compounds	1	0	0	0	0	0	0
Zinc Compounds	1	0	0	0	0	0	0
AMICK FARMS Total	**3**	**0**	**0**	**0**	**0**	**0**	**0**
BALTIMORE AIRCOIL COMPANY							
Chromium Compounds	0	0	0	0	0	372,277	0
Cobalt Compounds	0	0	0	0	0	4,736	0
Copper Compounds	0	0	0	0	0	55,375	0
Manganese Compounds	0	0	0	0	0	90,156	0
Nickel Compounds	0	0	0	0	0	477,077	0
BALTIMORE AIRCOIL COMPANY Total	**0**	**0**	**0**	**0**	**0**	**999,621**	**0**
BASF COLORS AND EFFECTS USA LLC							
Aniline	0	22	0	0	22	14,024	1,031
Biphenyl	0	91	0	0	91	144,521	2,365
Cyclohexane	0	51	0	0	51	18,841	3,436
Methanol	0	31,060	0	0	31,060	887,526	1,149,229
Nitrate Compounds	0	0	0	0	0	23,779	0
Nitric acid	0	0	0	0	0	0	24,162
N-Methyl-2-pyrrolidone	0	0	0	0	0	69,488	13
p-Chloroaniline	0	7	0	0	7	7,691	421
Xylene (mixed isomers)	0	930	0	0	930	500	4,333
BASF COLORS AND EFFECTS USA LLC Total	**0**	**32,161**	**0**	**0**	**32,161**	**1,166,370**	**1,184,990**
CALPINE CORP - GARRISON ENERGY CENTER							
Ammonia	0	2,950	0	0	2,950	0	0
CALPINE CORP - GARRISON ENERGY CENTER Total	**0**	**2,950**	**0**	**0**	**2,950**	**0**	**0**

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APPENDIX C

2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
CLARIOS BATTERY PLANT							
Antimony Compounds	0	1	0	0	1	5,532	0
Lead Compounds	0	26	11	0	36	1,392,706	0
CLARIOS BATTERY PLANT Total	**0**	**27**	**11**	**0**	**37**	**1,398,239**	**0**
CLARIOS DISTRIBUTION CENTER							
Antimony Compounds	0	0	0	0	0	9,807	0
Arsenic Compounds	0	0	0	0	0	604	0
Lead Compounds	0	0	0	0	0	2,456,114	0
CLARIOS DISTRIBUTION CENTER Total	**0**	**0**	**0**	**0**	**0**	**2,466,524**	**0**
COLOR WORKS PAINTING, INC.							
Manganese	0	0	0	0	0	0	0
COLOR WORKS PAINTING, INC. Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CRODA							
Acrylic acid	0	8	0	0	8	2,524	0
Certain Glycol Ethers	0	2	0	0	2	5,070	0
Diethanolamine	0	5	0	0	5	2,870	0
Ethylene oxide	0	1,293	0	0	1,293	0	396
Methanol	0	665	0	0	665	6,243	0
Naphthalene	0	1	0	0	1	854	0
n-Butyl alcohol	0	78	0	0	78	577	0
Nonylphenol	0	3,195	0	0	3,195	12,060	0
Nonylphenol Ethoxylates	0	0	0	0	0	1,295	0
Propylene oxide	0	210	0	0	210	20	782
CRODA Total	**0**	**5,457**	**0**	**0**	**5,457**	**31,512**	**1,178**

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APPENDIX C

2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
DELAWARE CITY REFINERY							
1,2,4-Trimethylbenzene	0	647	5	0	652	0	62,003
1,3-Butadiene	0	253	0	0	253	0	174
Ammonia	0	67,432	2,186	0	69,618	73	11,115,922
Anthracene	0	1	5	0	6	0	0
Asbestos (friable)	0	0	0	0	0	141,915	0
Benzene	0	4,605	9	0	4,614	23	626,499
Benzo(g,h,i)perylene	0	0	5	0	5	0	452
Carbon disulfide	0	1,271	0	0	1,271	0	2,656,738
Carbonyl sulfide	0	482	0	0	482	0	12,373,383
Certain Glycol Ethers	0	0	317	0	317	0	0
Creosote	0	7	0	40	47	946	0
Cresol (mixed isomers)	0	0	330	0	330	0	340,666
Cumene	0	282	5	0	287	0	3,656
Cyanide Compounds	0	0	145	0	145	0	14,379
Cyclohexane	0	1,678	5	0	1,683	18	6,981
Dioxin and Dioxin-like Compounds	0	0.001288	0.000000	0.000000	0.001288	0.000000	0.001288
Ethylbenzene	0	1,849	5	0	1,854	21	53,195
Ethylene	0	3,462	0	0	3,462	0	2,387
Hydrochloric acid	0	212	0	0	212	0	106,023
Hydrogen cyanide	0	129,759	202	0	129,961	0	207,115
Hydrogen Sulfide	0	23,194	366	0	23,560	0	343,194,315
Lead Compounds	0	83	107	0	190	675	0
Mercury Compounds	0	104.0000	0.7500	0.0000	104.7500	0.1625	0.0000
Molybdenum trioxide	0	14	0	0	14	16	0
Naphthalene	0	1,737	5	0	1,742	0	11,641
n-Hexane	0	12,510	5	0	12,515	0	144,929
Nickel Compounds	0	1,780	396	0	2,176	40	0
Nitrate Compounds	0	0	4,971,458	0	4,971,458	0	0
Phenanthrene	0	3	5	0	8	0	40
Phenol	0	94	165	0	259	0	346,971
Polycyclic Aromatic Compounds	0	237	4	0	241	0	372
Propylene	0	3,558	0	0	3,558	0	14,716
Styrene	0	7	5	0	12	18	1,127
Sulfuric acid	0	98,117	0	0	98,117	0	0
Tetrachloroethylene	0	12	0	0	12	0	0
Toluene	0	7,840	5	0	7,845	29	242,638
Xylene (mixed isomers)	0	7,739	5	0	7,744	67	214,283
DELAWARE CITY REFINERY Total	**0**	**368,969**	**4,975,745**	**40**	**5,344,754**	**143,841**	**371,740,605**

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APPENDIX C

2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
DENTSPLY SIRONA MAIN PLANT							
Mercury	0	0.6800	0.0000	0.0000	0.6800	61.9200	0.0000
DENTSPLY SIRONA MAIN PLANT Total	**0**	**0.6800**	**0.0000**	**0.0000**	**0.6800**	**61.9200**	**0.0000**
DENTSPLY SIRONA WEST PLANT							
Methanol	0	1,983	0	0	1,983	8,735	0
Methyl methacrylate	0	3,795	0	0	3,795	183	0
DENTSPLY SIRONA WEST PLANT Total	**0**	**5,778**	**0**	**0**	**5,778**	**8,918**	**0**
DOVER AFB							
1,2,4-Trimethylbenzene	0	42	0	0	42	0	0
Cumene	0	42	0	0	42	0	0
Ethylbenzene	0	42	0	0	42	0	0
Naphthalene	0	42	0	0	42	0	0
Xylene (mixed isomers)	0	42	0	0	42	0	0
DOVER AFB Total	**0**	**210**	**0**	**0**	**210**	**0**	**0**
DUHADAWAY TOOL & DIE SHOP INC							
Chromium	0	0	0	0	0	8,061	0
Nickel	0	0	0	0	0	8,482	0
DUHADAWAY TOOL & DIE SHOP INC Total	**0**	**0**	**0**	**0**	**0**	**16,543**	**0**
EDGE MOOR/HAY ROAD ENERGY CENTERS							
1,2,4-Trimethylbenzene	1	0	0	0	0	0	0
Ammonia	0	5,632	1	0	5,633	66	0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0
Naphthalene	1	0	0	0	0	0	0
n-Hexane	0	3,116	0	0	3,116	0	0
Polycyclic Aromatic Compounds	0	6	0	0	6	0	0
EDGE MOOR/HAY ROAD ENERGY CENTERS Total	**2**	**8,754**	**1**	**0**	**8,756**	**66**	**0**
FUJIFILM							
Ethylene glycol	1	0	0	0	0	0	0
FUJIFILM Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
GAC SEAFORD							
1,2,4-Trimethylbenzene	1	0	0	0	0	0	0
GAC SEAFORD Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**

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APPENDIX C

2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
HANDYTUBE							
Chromium	0	0	0	0	0	39,771	0
Manganese	0	0	0	0	0	3,773	0
Nickel	0	0	0	0	0	43,311	0
Trichloroethylene	0	4,420	0	0	4,420	8,965	0
HANDYTUBE Total	**0**	**4,420**	**0**	**0**	**4,420**	**95,820**	**0**
HANOVER FOODS							
Ammonia	0	8,380	0	0	8,380	0	0
HANOVER FOODS Total	**0**	**8,380**	**0**	**0**	**8,380**	**0**	**0**
HMA HERITAGE CONCRETE BEAR							
Lead	0	0	0	13	13	0	0
HMA HERITAGE CONCRETE BEAR Total	**0**	**0**	**0**	**13**	**13**	**0**	**0**
HMA HERITAGE CONCRETE CHESWOLD							
Lead	0	0	0	4	4	0	0
HMA HERITAGE CONCRETE CHESWOLD Total	**0**	**0**	**0**	**4**	**4**	**0**	**0**
HMA HERITAGE CONCRETE HEALD STREET							
Lead	0	0	0	17	17	0	0
HMA HERITAGE CONCRETE HEALD STREET Total	**0**	**0**	**0**	**17**	**17**	**0**	**0**
HMA HERITAGE CONCRETE MIDDLETOWN							
Lead	0	0	0	8	8	0	0
HMA HERITAGE CONCRETE MIDDLETOWN Total	**0**	**0**	**0**	**8**	**8**	**0**	**0**
HONEYWELL							
Boron trifluoride	0	365	0	0	365	0	71,154
Ethylene glycol	0	0	0	0	0	200	0
Hydrogen fluoride	0	544	0	0	544	0	96
Methanol	0	9	0	0	9	1,040	0
HONEYWELL Total	**0**	**918**	**0**	**0**	**918**	**1,240**	**71,250**
IKO							
Polycyclic Aromatic Compounds	0	0	0	0	0	163	550
IKO Total	**0**	**0**	**0**	**0**	**0**	**163**	**550**

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2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
INDIAN RIVER GENERATING STATION							
Ammonia	0	2,548	0	0	2,548	0	17,728
Hydrochloric acid	0	221	0	0	221	0	169,602
Lead Compounds	0	5	0	231	236	0	0
Mercury Compounds	0	0.8000	0.0000	22.4000	23.2000	0.0000	0.0000
Sulfuric acid	0	451	0	0	451	0	254,701
INDIAN RIVER GENERATING STATION Total	**0**	**3,226**	**0**	**254**	**3,480**	**0**	**442,031**
INTERVET INC							
Mercury Compounds	0	0.0000	0.0000	0.0000	0.0000	7.2786	0.0000
INTERVET INC Total	**0**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**7.2786**	**0.0000**
JUSTIN TANKS							
Styrene	0	11,166	0	0	11,166	5,406	34,272
JUSTIN TANKS Total	**0**	**11,166**	**0**	**0**	**11,166**	**5,406**	**34,272**
KUEHNE							
Chlorine	0	18	0	0	18	0	0
KUEHNE Total	**0**	**18**	**0**	**0**	**18**	**0**	**0**
MESSER LLC							
Chlorodifluoromethane	1	0	0	0	0	0	0
MESSER LLC Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
METAL MASTERS							
Chromium	0	0	0	0	0	207,479	0
Nickel	0	1	0	0	1	1,039	0
METAL MASTERS Total	**0**	**1**	**0**	**0**	**1**	**208,518**	**0**
MOUNTAIRE FARMS - FRANKFORD FEED MILL							
Copper Compounds	0	0	0	0	0	0	0
Manganese Compounds	0	0	0	0	0	0	0
Zinc Compounds	0	0	0	0	0	0	0
MOUNTAIRE FARMS - FRANKFORD FEED MILL Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MOUNTAIRE FARMS - SELBYVILLE PLANT							
Peracetic acid	0	0	0	0	0	0	332,148
MOUNTAIRE FARMS - SELBYVILLE PLANT Total	**0**	**0**	**0**	**0**	**0**	**0**	**332,148**

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2019 ON-SITE RELEASES BY FACILITY AND CHEMICAL

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
MOUNTAIRE FARMS OF DELAWARE							
Ammonia	0	33,800	0	760	34,560	567	187,768
Copper Compounds	0	0	0	207	207	630	0
Hydrogen Sulfide	0	1,053	0	0	1,053	0	121,204
Manganese Compounds	0	0	0	0	0	0	0
Peracetic acid	0	0	0	0	0	0	561,416
Zinc Compounds	0	0	0	225	225	2,058	0
MOUNTAIRE FARMS OF DELAWARE Total	**0**	**34,853**	**0**	**1,192**	**36,045**	**3,255**	**870,388**
NATIONAL GUARD TRAINING SITE RANGE							
Lead	0	0	0	5,027	5,027	0	0
NATIONAL GUARD TRAINING SITE RANGE Total	**0**	**0**	**0**	**5,027**	**5,027**	**0**	**0**
NORAMCO							
Methanol	0	115	0	0	115	33,891	0
n-Butyl alcohol	0	46	0	0	46	224,969	0
Toluene	0	753	0	0	753	126,843	0
NORAMCO Total	**0**	**914**	**0**	**0**	**914**	**385,703**	**0**
ORIENT CORP							
Aniline	0	78	0	0	78	1,571	309,000
Diphenylamine	0	0	0	0	0	0	0
Nitrobenzene	0	2	0	0	2	0	0
ORIENT CORP Total	**0**	**80**	**0**	**0**	**80**	**1,571**	**309,000**
OWEN STEEL COMPANY							
Lead Compounds	0	0	0	0	0	300	0
Manganese Compounds	0	34	0	0	34	3,400	0
Nickel Compounds	0	1	0	0	1	7,500	0
OWEN STEEL COMPANY Total	**0**	**35**	**0**	**0**	**35**	**11,200**	**0**
PERDUE BRIDGEVILLE							
Chromium Compounds	1	0	0	0	0	0	0
Copper Compounds	1	0	0	0	0	0	0
Selenium Compounds	1	0	0	0	0	0	0
Zinc Compounds	1	0	0	0	0	0	0
PERDUE BRIDGEVILLE Total	**4**	**0**	**0**	**0**	**0**	**0**	**0**

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PERDUE GEORGETOWN							
Hydrogen Sulfide	0	3,956	0	0	3,956	0	86,926
Nitrate Compounds	0	0	347,086	0	347,086	122	0
Peracetic acid	0	0	184	0	184	0	368,742
PERDUE GEORGETOWN Total	**0**	**3,956**	**347,270**	**0**	**351,226**	**122**	**455,668**
PERDUE MILFORD							
Peracetic acid	0	0	0	0	0	179	358,275
PERDUE MILFORD Total	**0**	**0**	**0**	**0**	**0**	**179**	**358,275**
PICTSWEET BRIDGEVILLE							
Ammonia	0	1,300	0	0	1,300	0	0
PICTSWEET BRIDGEVILLE Total	**0**	**1,300**	**0**	**0**	**1,300**	**0**	**0**
PRINCE MINERALS LLC							
Barium Compounds	1	0	0	0	0	0	0
Manganese Compounds	0	2	0	0	2	0	0
Nickel Compounds	1	0	0	0	0	0	0
PRINCE MINERALS LLC Total	**2**	**2**	**0**	**0**	**2**	**0**	**0**
ROGERS CORP							
Copper	0	10	0	0	10	2,310	0
Ethylbenzene	0	500	0	0	500	1,000	21,000
Xylene (mixed isomers)	0	1,950	0	0	1,950	4,700	110,000
ROGERS CORP Total	**0**	**2,460**	**0**	**0**	**2,460**	**8,010**	**131,000**
ROHM & HAAS B2 B3 B8							
Diisocyanates	0	0	0	0	0	2,116	0
N,N-Dimethylformamide	0	4,468	0	0	4,468	396,003	4,991,547
ROHM & HAAS B2 B3 B8 Total	**0**	**4,468**	**0**	**0**	**4,468**	**398,119**	**4,991,547**
ROHM & HAAS B5 B6							
4,4'-Methylenebis(2-chloroaniline)	0	1	0	0	1	1,083	0
Diisocyanates	0	2	0	0	2	12,200	0
N-Methyl-2-pyrrolidone	0	2,112	0	0	2,112	49,822	0
ROHM & HAAS B5 B6 Total	**0**	**2,115**	**0**	**0**	**2,115**	**63,105**	**0**

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FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
ROHM & HAAS B7 B15							
4,4'-Methylenebis(2-chloroaniline)	0	0	0	0	0	203	0
N-Methyl-2-pyrrolidone	0	712	0	0	712	9,775	0
ROHM & HAAS B7 B15 Total	**0**	**712**	**0**	**0**	**712**	**9,978**	**0**
SIMMONS BRIDGEVILLE							
Nitrate Compounds	0	0	0	0	0	60,339	0
SIMMONS BRIDGEVILLE Total	**0**	**0**	**0**	**0**	**0**	**60,339**	**0**
SPI PHARMA							
Chlorine	1	0	0	0	0	0	0
Nitric acid	1	0	0	0	0	0	0
SPI PHARMA Total	**2**	**0**	**0**	**0**	**0**	**0**	**0**
TWINCO ROMAX							
Methanol	0	2,637	0	0	2,637	0	0
TWINCO ROMAX Total	**0**	**2,637**	**0**	**0**	**2,637**	**0**	**0**
V&S DELAWARE GALVANIZING							
Lead	0	8	3	0	11	1,434	1,878
Zinc Compounds	0	511	318	0	829	226,050	371,409
V&S DELAWARE GALVANIZING Total	**0**	**519**	**321**	**0**	**840**	**227,484**	**373,287**
VEOLIA - RED LION PLANT							
Hydrazine	0	0	0	0	0	0	0
Hydrazine sulfate	0	0	0	0	0	0	0
Hydrogen Sulfide	0	172	0	0	172	0	0
Sulfuric acid	0	2,482	0	0	2,482	0	0
VEOLIA - RED LION PLANT Total	**0**	**2,655**	**0**	**0**	**2,655**	**0**	**0**
VP RACING FUELS							
Lead Compounds	0	0	0	0	0	0	0
Toluene	1	0	0	0	0	0	0
VP RACING FUELS Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
W.L. GORE							
Lead	0	0	0	0	0	7	0
W.L. GORE Total	**0**	**0**	**0**	**0**	**0**	**7**	**0**
STATE TOTALS	**24**	**521,593**	**5,396,564**	**6,555**	**5,924,712**	**8,164,469**	**385,628,133**

Source: DNREC 2019 TRI Database, October, 2020
A "1" in the Form A column indicates a Form A report

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
AEARO TECHNOLOGIES LLC										
Diisocyanates	0	0	0	10,132	0	10,132	0	0	0	0
Toluene diisocyanate (mixed isomers)	0	0	0	1,477	0	1,477	0	0	0	0
AEARO TECHNOLOGIES LLC Total	**0**	**0**	**0**	**11,609**	**0**	**11,609**	**0**	**0**	**0**	**0**
AGILENT TECHNOLOGIES										
Acetonitrile	0	0	19,787	0	0	19,787	0	0	0	0
Methanol	0	0	54,451	81	0	54,532	0	0	0	0
Toluene	0	0	141,108	480	0	141,588	0	0	0	0
AGILENT TECHNOLOGIES Total	**0**	**0**	**215,346**	**561**	**0**	**215,907**	**0**	**0**	**0**	**0**
AIR LIQUIDE ADVANCED SEPARATIONS										
Cyclohexane	0	0	29,660	0	0	29,660	0	0	0	0
Methanol	0	0	0	94,507	0	94,507	2,983,147	0	0	2,983,147
N,N-Dimethylformamide	23,400	0	750	0	0	24,150	0	0	0	0
n-Hexane	0	0	5	0	0	5	1,348,798	0	0	1,348,798
N-Methyl-2-pyrrolidone	57,609	0	19,100	0	0	76,709	0	0	0	0
AIR LIQUIDE ADVANCED SEPARATIONS Total	**81,009**	**0**	**49,515**	**94,507**	**0**	**225,031**	**4,331,945**	**0**	**0**	**4,331,945**
ALLEN HARIM FARMS SEAFORD MILL										
Copper	0	0	0	0	0	0	0	0	0	0
Copper Compounds	0	0	0	0	0	0	0	0	0	0
Manganese	0	0	0	0	0	0	0	0	0	0
Manganese Compounds	0	0	0	0	0	0	0	0	0	0
Zinc Compounds	0	0	0	0	0	0	0	0	0	0
ALLEN HARIM FARMS SEAFORD MILL Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
ALLEN HARIM FOODS HARBESON										
Nitrate Compounds	0	0	0	0	0	0	0	0	0	0
Peracetic acid	0	0	0	0	0	0	0	0	0	0
ALLEN HARIM FOODS HARBESON Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
ALLEN HARIM FOODS MILLSBORO										
Peracetic acid	0	0	0	0	0	0	0	0	0	0
ALLEN HARIM FOODS MILLSBORO Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
AMICK FARMS										
Copper Compounds	0	0	0	0	0	0	0	0	0	0
Manganese Compounds	0	0	0	0	0	0	0	0	0	0
Zinc Compounds	0	0	0	0	0	0	0	0	0	0
AMICK FARMS Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
BALTIMORE AIRCOIL COMPANY										
Cobalt Compounds	0	4,730	0	0	6	4,736	0	0	0	0
Copper Compounds	0	55,309	0	0	66	55,375	0	0	0	0
Manganese Compounds	0	90,047	0	0	109	90,156	0	0	0	0
Nickel Compounds	0	476,504	0	0	573	477,077	0	0	0	0
CHROMIUM COMPOUNDS2	0	371,827	0	0	450	372,277	0	0	0	0
BALTIMORE AIRCOIL COMPANY Total	**0**	**998,417**	**0**	**0**	**1,204**	**999,621**	**0**	**0**	**0**	**0**
BASF COLORS AND EFFECTS USA LLC										
Aniline	10,759	0	2,655	610	0	14,024	0	0	1,031	1,031
Biphenyl	9,442	0	131,163	3,916	0	144,521	0	0	2,365	2,365
Cyclohexane	0	18,841	0	0	0	18,841	0	0	3,436	3,436
Methanol	356,704	494,671	16,961	19,190	0	887,526	329,345	0	819,884	1,149,229
Nitrate Compounds	23,779	0	0	0	0	23,779	0	0	0	0
Nitric acid	0	0	0	0	0	0	0	0	24,162	24,162
N-Methyl-2-pyrrolidone	0	0	0	69,488	0	69,488	0	0	13	13
p-Chloroaniline	3,177	0	4,405	109	0	7,691	0	0	421	421
Xylene (mixed isomers)	214	0	281	5	0	500	0	0	4,333	4,333
BASF COLORS AND EFFECTS USA LLC Total	**404,075**	**513,512**	**155,465**	**93,318**	**0**	**1,166,370**	**329,345**	**0**	**855,645**	**1,184,990**
CALPINE CORP - GARRISON ENERGY CENTER										
Ammonia	0	0	0	0	0	0	0	0	0	0
CALPINE CORP - GARRISON ENERGY CENTER Tota	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
CLARIOS BATTERY PLANT										
Antimony Compounds	0	5,519	0	0	14	5,532	0	0	0	0
Lead Compounds	0	1,382,845	0	0	9,861	1,392,706	0	0	0	0
CLARIOS BATTERY PLANT Total	**0**	**1,388,364**	**0**	**0**	**9,875**	**1,398,239**	**0**	**0**	**0**	**0**
CLARIOS DISTRIBUTION CENTER										
Antimony Compounds	0	9,807	0	0	0	9,807	0	0	0	0
Arsenic Compounds	0	604	0	0	0	604	0	0	0	0
Lead Compounds	2	2,455,172	0	0	940	2,456,114	0	0	0	0
CLARIOS DISTRIBUTION CENTER Total	**2**	**2,465,582**	**0**	**0**	**940**	**2,466,524**	**0**	**0**	**0**	**0**
COLOR WORKS PAINTING, INC.										
Manganese	0	0	0	0	0	0	0	0	0	0
COLOR WORKS PAINTING, INC. Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
CRODA										
Certain Glycol Ethers	5,070	0	0	0	0	5,070	0	0	0	0
Diethanolamine	2,870	0	0	0	0	2,870	0	0	0	0
Ethylene oxide	0	0	0	0	0	0	0	0	396	396
Methanol	730	0	0	5,513	0	6,243	0	0	0	0
Naphthalene	8	0	0	845	0	854	0	0	0	0
n-Butyl alcohol	577	0	0	0	0	577	0	0	0	0
Propylene oxide	0	0	0	20	0	20	0	0	782	782
Nonylphenol	12,060	0	0	0	0	12,060	0	0	0	0
Acrylic acid	2,524	0	0	0	0	2,524	0	0	0	0
Nonylphenol Ethoxylates	1,295	0	0	0	0	1,295	0	0	0	0
CRODA Total	**25,134**	**0**	**0**	**6,378**	**0**	**31,512**	**0**	**0**	**1,178**	**1,178**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
DELAWARE CITY REFINERY										
1,2,4-Trimethylbenzene	0	0	0	0	0	0	0	0	62,003	62,003
1,3-Butadiene	0	0	0	0	0	0	0	0	174	174
Ammonia	0	0	0	0	73	73	0	11,023,195	92,727	11,115,922
Anthracene	0	0	0	0	0	0	0	0	0	0
Asbestos (friable)	0	0	0	0	141,915	141,915	0	0	0	0
Benzene	0	17	0	0	6	23	0	454,728	171,771	626,499
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	452	452
Carbon disulfide	0	0	0	0	0	0	0	125,252	2,531,486	2,656,738
Carbonyl sulfide	0	0	0	0	0	0	0	0	12,373,383	12,373,383
Certain Glycol Ethers	0	0	0	0	0	0	0	0	0	0
Creosote	0	0	0	0	946	946	0	0	0	0
Cresol (mixed isomers)	0	0	0	0	0	0	0	23,579	317,087	340,666
Cumene	0	0	0	0	0	0	0	0	3,656	3,656
Cyanide Compounds	0	0	0	0	0	0	0	0	14,379	14,379
Cyclohexane	0	18	0	0	0	18	0	0	6,981	6,981
Dioxin and Dioxin-like Compounds	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.001288	0.001288
Ethylbenzene	0	21	0	0	0	21	0	0	53,195	53,195
Ethylene	0	0	0	0	0	0	0	0	2,387	2,387
Hydrochloric acid	0	0	0	0	0	0	0	0	106,023	106,023
Hydrogen cyanide	0	0	0	0	0	0	0	0	207,115	207,115
Hydrogen Sulfide	0	0	0	0	0	0	0	0	343,194,315	343,194,315
Lead Compounds	0	659	0	0	16	675	0	0	0	0
Mercury Compounds	0.0000	0.1563	0.0000	0.0000	0.0062	0.1625	0.0000	0.0000	0.0000	0.0000
Molybdenum trioxide	0	0	0	16	0	16	0	0	0	0
Naphthalene	0	0	0	0	0	0	0	0	11,641	11,641
n-Hexane	0	0	0	0	0	0	0	0	144,929	144,929
Nickel Compounds	0	40	0	0	0	40	0	0	0	0
Nitrate Compounds	0	0	0	0	0	0	0	0	0	0
Phenanthrene	0	0	0	0	0	0	0	0	40	40
Phenol	0	0	0	0	0	0	0	66,497	280,474	346,971
Polycyclic Aromatic Compounds	0	0	0	0	0	0	0	0	372	372
Propylene	0	0	0	0	0	0	0	0	14,716	14,716
Styrene	0	18	0	0	0	18	0	0	1,127	1,127
Sulfuric acid	0	0	0	0	0	0	0	0	0	0
Tetrachloroethylene	0	0	0	0	0	0	0	0	0	0
Toluene	0	25	0	0	4	29	0	0	242,638	242,638
Xylene (mixed isomers)	0	57	0	1	9	67	0	0	214,283	214,283
DELAWARE CITY REFINERY Total	**0**	**855**	**0**	**18**	**142,969**	**143,841**	**0**	**11,693,251**	**360,047,354**	**371,740,605**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
DENTSPLY SIRONA MAIN PLANT										
Mercury	0.0000	61.9200	0.0000	0.0000	0.0000	61.9200	0.0000	0.0000	0.0000	0.0000
DENTSPLY SIRONA MAIN PLANT Total	**0.0000**	**61.9200**	**0.0000**	**0.0000**	**0.0000**	**61.9200**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
DENTSPLY SIRONA WEST PLANT										
Methanol	71	0	8,664	0	0	8,735	0	0	0	0
Methyl methacrylate	64	0	119	0	0	183	0	0	0	0
DENTSPLY SIRONA WEST PLANT Total	**136**	**0**	**8,782**	**0**	**0**	**8,918**	**0**	**0**	**0**	**0**
DOVER AFB										
1,2,4-Trimethylbenzene	0	0	0	0	0	0	0	0	0	0
Cumene	0	0	0	0	0	0	0	0	0	0
Ethylbenzene	0	0	0	0	0	0	0	0	0	0
Naphthalene	0	0	0	0	0	0	0	0	0	0
Xylene (mixed isomers)	0	0	0	0	0	0	0	0	0	0
DOVER AFB Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
DUHADAWAY TOOL & DIE SHOP INC										
Chromium	0	7,981	0	0	80	8,061	0	0	0	0
Nickel	0	8,398	0	0	84	8,482	0	0	0	0
DUHADAWAY TOOL & DIE SHOP INC Total	**0**	**16,379**	**0**	**0**	**164**	**16,543**	**0**	**0**	**0**	**0**
EDGE MOOR/HAY ROAD ENERGY CENTERS										
1,2,4-Trimethylbenzene	0	0	0	0	0	0	0	0	0	0
Ammonia	66	0	0	0	0	66	0	0	0	0
Benzo(g,h,i)perylene	0	0	0	0	0	0	0	0	0	0
Naphthalene	0	0	0	0	0	0	0	0	0	0
n-Hexane	0	0	0	0	0	0	0	0	0	0
Polycyclic Aromatic Compounds	0	0	0	0	0	0	0	0	0	0
EDGE MOOR/HAY ROAD ENERGY CENTERS Total	**66**	**0**	**0**	**0**	**0**	**66**	**0**	**0**	**0**	**0**
FUJIFILM										
Ethylene glycol	0	0	0	0	0	0	0	0	0	0
FUJIFILM Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
GAC SEAFORD										
1,2,4-Trimethylbenzene	0	0	0	0	0	0	0	0	0	0
GAC SEAFORD Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
HANDYTUBE										
Chromium	0	39,550	0	0	221	39,771	0	0	0	0
Manganese	0	3,754	0	0	19	3,773	0	0	0	0
Nickel	0	42,986	0	0	325	43,311	0	0	0	0
Trichloroethylene	0	0	0	8,965	0	8,965	0	0	0	0
HANDYTUBE Total	**0**	**86,290**	**0**	**8,965**	**565**	**95,820**	**0**	**0**	**0**	**0**
HANOVER FOODS										
Ammonia	0	0	0	0	0	0	0	0	0	0
HANOVER FOODS Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
HMA HERITAGE CONCRETE BEAR FACILITY										
Lead	0	0	0	0	0	0	0	0	0	0
HMA HERITAGE CONCRETE BEAR FACILITY Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
HMA HERITAGE CONCRETE CHESWOLD FACILITY										
Lead	0	0	0	0	0	0	0	0	0	0
HMA HERITAGE CONCRETE CHESWOLD FACILITY T	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
HMA HERITAGE CONCRETE HEALD STREET FACILITY										
Lead	0	0	0	0	0	0	0	0	0	0
HMA HERITAGE CONCRETE HEALD STREET FACILI	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
HMA HERITAGE CONCRETE MIDDLETOWN FACILITY										
Lead	0	0	0	0	0	0	0	0	0	0
HMA HERITAGE CONCRETE MIDDLETOWN FACILIT	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
HONEYWELL										
Boron trifluoride	0	0	0	0	0	0	0	0	71,154	71,154
Ethylene glycol	0	0	200	0	0	200	0	0	0	0
Hydrogen fluoride	0	0	0	0	0	0	0	0	96	96
Methanol	80	0	320	0	640	1,040	0	0	0	0
HONEYWELL Total	**80**	**0**	**520**	**0**	**640**	**1,240**	**0**	**0**	**71,250**	**71,250**
IKO										
Polycyclic Aromatic Compounds	0	163	0	0	0	163	550	0	0	550
IKO Total	**0**	**163**	**0**	**0**	**0**	**163**	**550**	**0**	**0**	**550**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
INDIAN RIVER GENERATING STATION										
Ammonia	0	0	0	0	0	0	0	0	17,728	17,728
Hydrochloric acid	0	0	0	0	0	0	0	0	169,602	169,602
Lead Compounds	0	0	0	0	0	0	0	0	0	0
Mercury Compounds	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sulfuric acid	0	0	0	0	0	0	0	0	254,701	254,701
INDIAN RIVER GENERATING STATION Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**442,031**	**442,031**
INTERVET INC										
Mercury Compounds	0.0000	6.0000	0.0000	0.0000	1.2786	7.2786	0.0000	0.0000	0.0000	0.0000
INTERVET INC Total	**0.0000**	**6.0000**	**0.0000**	**0.0000**	**1.2786**	**7.2786**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
JUSTIN TANKS										
Styrene	0	0	0	5,406	0	5,406	34,272	0	0	34,272
JUSTIN TANKS Total	**0**	**0**	**0**	**5,406**	**0**	**5,406**	**34,272**	**0**	**0**	**34,272**
KUEHNE										
Chlorine	0	0	0	0	0	0	0	0	0	0
KUEHNE Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MESSER LLC										
Chlorodifluoromethane	0	0	0	0	0	0	0	0	0	0
MESSER LLC Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
METAL MASTERS										
Chromium	0	206,729	0	0	750	207,479	0	0	0	0
Nickel	0	750	0	0	289	1,039	0	0	0	0
METAL MASTERS Total	**0**	**207,479**	**0**	**0**	**1,039**	**208,518**	**0**	**0**	**0**	**0**
MOUNTAIRE FARMS - FRANKFORD FEED MILL										
Copper Compounds	0	0	0	0	0	0	0	0	0	0
Manganese Compounds	0	0	0	0	0	0	0	0	0	0
Zinc Compounds	0	0	0	0	0	0	0	0	0	0
MOUNTAIRE FARMS - FRANKFORD FEED MILL Tota	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
MOUNTAIRE FARMS - SELBYVILLE PLANT										
Peracetic acid	0	0	0	0	0	0	0	0	332,148	332,148
MOUNTAIRE FARMS - SELBYVILLE PLANT Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**332,148**	**332,148**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
MOUNTAIRE FARMS OF DELAWARE										
Ammonia	0	544	0	0	23	567	0	0	187,768	187,768
Copper Compounds	0	25	0	0	605	630	0	0	0	0
Hydrogen Sulfide	0	0	0	0	0	0	0	0	121,204	121,204
Manganese Compounds	0	0	0	0	0	0	0	0	0	0
Peracetic acid	0	0	0	0	0	0	0	0	561,416	561,416
Zinc Compounds	0	1,976	0	0	82	2,058	0	0	0	0
MOUNTAIRE FARMS OF DELAWARE Total	**0**	**2,545**	**0**	**0**	**710**	**3,255**	**0**	**0**	**870,388**	**870,388**
NATIONAL GUARD TRAINING SITE RANGE										
Lead	0	0	0	0	0	0	0	0	0	0
NATIONAL GUARD TRAINING SITE RANGE Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
NORAMCO										
Methanol	1,695	0	32,196	0	0	33,891	0	0	0	0
n-Butyl alcohol	11,248	0	213,721	0	0	224,969	0	0	0	0
Toluene	1,268	0	125,575	0	0	126,843	0	0	0	0
NORAMCO Total	**14,211**	**0**	**371,492**	**0**	**0**	**385,703**	**0**	**0**	**0**	**0**
ORIENT CORP										
Aniline	1,500	0	0	0	71	1,571	220,000	0	89,000	309,000
Nitrobenzene	0	0	0	0	0	0	0	0	0	0
Diphenylamine	0	0	0	0	0	0	0	0	0	0
ORIENT CORP Total	**1,500**	**0**	**0**	**0**	**71**	**1,571**	**220,000**	**0**	**89,000**	**309,000**
OWEN STEEL COMPANY										
Lead Compounds	0	300	0	0	0	300	0	0	0	0
Manganese Compounds	0	3,400	0	0	0	3,400	0	0	0	0
Nickel Compounds	0	7,500	0	0	0	7,500	0	0	0	0
OWEN STEEL COMPANY Total	**0**	**11,200**	**0**	**0**	**0**	**11,200**	**0**	**0**	**0**	**0**
PERDUE BRIDGEVILLE										
Copper Compounds	0	0	0	0	0	0	0	0	0	0
Zinc Compounds	0	0	0	0	0	0	0	0	0	0
CHROMIUM COMPOUNDS2	0	0	0	0	0	0	0	0	0	0
Selenium Compounds	0	0	0	0	0	0	0	0	0	0
PERDUE BRIDGEVILLE Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
PERDUE GEORGETOWN										
Hydrogen Sulfide	0	0	0	0	0	0	0	0	86,926	86,926
Nitrate Compounds	0	0	0	0	122	122	0	0	0	0
Peracetic acid	0	0	0	0	0	0	0	0	368,742	368,742
PERDUE GEORGETOWN Total	**0**	**0**	**0**	**0**	**122**	**122**	**0**	**0**	**455,668**	**455,668**
PERDUE MILFORD										
Peracetic acid	179	0	0	0	0	179	0	0	358,275	358,275
PERDUE MILFORD Total	**179**	**0**	**0**	**0**	**0**	**179**	**0**	**0**	**358,275**	**358,275**
PICTSWEET BRIDGEVILLE										
Ammonia	0	0	0	0	0	0	0	0	0	0
PICTSWEET BRIDGEVILLE Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
PRINCE MINERALS LLC										
Barium Compounds	0	0	0	0	0	0	0	0	0	0
Manganese Compounds	0	0	0	0	0	0	0	0	0	0
Nickel Compounds	0	0	0	0	0	0	0	0	0	0
PRINCE MINERALS LLC Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
ROGERS CORP										
Copper	5	2,300	0	0	5	2,310	0	0	0	0
Ethylbenzene	0	0	0	1,000	0	1,000	0	0	21,000	21,000
Xylene (mixed isomers)	0	0	0	4,700	0	4,700	0	0	110,000	110,000
ROGERS CORP Total	**5**	**2,300**	**0**	**5,700**	**5**	**8,010**	**0**	**0**	**131,000**	**131,000**
ROHM & HAAS B2 B3 B8										
Diisocyanates	0	0	0	2,116	0	2,116	0	0	0	0
N,N-Dimethylformamide	249,107	0	101,476	45,420	0	396,003	4,991,209	0	338	4,991,547
ROHM & HAAS B2 B3 B8 Total	**249,107**	**0**	**101,476**	**47,536**	**0**	**398,119**	**4,991,209**	**0**	**338**	**4,991,547**
ROHM & HAAS B5 B6										
4,4'-Methylenebis(2-chloroaniline)	0	0	0	1,083	0	1,083	0	0	0	0
Diisocyanates	0	0	0	12,200	0	12,200	0	0	0	0
N-Methyl-2-pyrrolidone	0	47,975	0	591	1,256	49,822	0	0	0	0
ROHM & HAAS B5 B6 Total	**0**	**47,975**	**0**	**13,874**	**1,256**	**63,105**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX D

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY FACILITY

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
ROHM & HAAS B7 B15										
4,4'-Methylenebis(2-chloroaniline)	0	0	0	203	0	203	0	0	0	0
N-Methyl-2-pyrrolidone	0	9,358	0	197	220	9,775	0	0	0	0
ROHM & HAAS B7 B15 Total	**0**	**9,358**	**0**	**400**	**220**	**9,978**	**0**	**0**	**0**	**0**
SIMMONS BRIDGEVILLE										
Nitrate Compounds	60,339	0	0	0	0	60,339	0	0	0	0
SIMMONS BRIDGEVILLE Total	**60,339**	**0**	**0**	**0**	**0**	**60,339**	**0**	**0**	**0**	**0**
SPI PHARMA										
Chlorine	0	0	0	0	0	0	0	0	0	0
Nitric acid	0	0	0	0	0	0	0	0	0	0
SPI PHARMA Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
TWINCO ROMAX										
Methanol	0	0	0	0	0	0	0	0	0	0
TWINCO ROMAX Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
V&S DELAWARE GALVANIZING										
Lead	0	1,143	0	0	292	1,434	1,878	0	0	1,878
Zinc Compounds	0	171,357	0	0	54,693	226,050	371,409	0	0	371,409
V&S DELAWARE GALVANIZING Total	**0**	**172,500**	**0**	**0**	**54,985**	**227,484**	**373,287**	**0**	**0**	**373,287**
VEOLIA - RED LION PLANT										
Hydrazine	0	0	0	0	0	0	0	0	0	0
Hydrazine sulfate	0	0	0	0	0	0	0	0	0	0
Hydrogen Sulfide	0	0	0	0	0	0	0	0	0	0
Sulfuric acid	0	0	0	0	0	0	0	0	0	0
VEOLIA - RED LION PLANT Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
VP RACING FUELS										
Lead Compounds	0	0	0	0	0	0	0	0	0	0
Toluene	0	0	0	0	0	0	0	0	0	0
VP RACING FUELS Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
W.L. GORE										
Lead	0	0	0	0	7	7	0	0	0	0
W.L. GORE Total	**0**	**0**	**0**	**0**	**7**	**7**	**0**	**0**	**0**	**0**
STATE TOTALS	**835,843**	**5,922,986**	**902,596**	**288,272**	**214,772**	**8,164,469**	**10,280,608**	**11,693,251**	**363,654,274**	**385,628,133**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX E

2019 ON-SITE RELEASE SUMMARY BY FACILITY

FACILITY - RANKED BY TOTAL ON-SITE RELEASE	ON-SITE RELEASES				TRANSFERS OFF-SITE	ON-SITE WASTE MGMT.
	TO AIR	TO WATER	TO LAND	TOTAL		
DELAWARE CITY REFINERY	368,969	4,975,745	40	5,344,754	143,841	371,740,605
PERDUE GEORGETOWN	3,956	347,270	0	351,226	122	455,668
ALLEN HARIM FOODS HARBESON	0	73,217	0	73,217	0	0
MOUNTAIRE FARMS OF DELAWARE	34,853	0	1,192	36,045	3,255	870,388
BASF COLORS AND EFFECTS USA LLC	32,161	0	0	32,161	1,166,370	1,184,990
JUSTIN TANKS	11,166	0	0	11,166	5,406	34,272
AIR LIQUIDE ADVANCED SEPARATIONS	10,426	0	0	10,426	225,031	4,331,945
EDGE MOOR/HAY ROAD ENERGY CENTERS	8,754	1	0	8,756	66	0
HANOVER FOODS	8,380	0	0	8,380	0	0
DENTSPLY SIRONA WEST PLANT	5,778	0	0	5,778	8,918	0
CRODA	5,457	0	0	5,457	31,512	1,178
NATIONAL GUARD TRAINING SITE RANGE	0	0	5,027	5,027	0	0
ROHM & HAAS B2 B3 B8	4,468	0	0	4,468	398,119	4,991,547
HANDYTUBE	4,420	0	0	4,420	95,820	0
INDIAN RIVER GENERATING STATION	3,226	0	254	3,480	0	442,031
CALPINE CORP - GARRISON ENERGY CENTE	2,950	0	0	2,950	0	0
VEOLIA - RED LION PLANT	2,655	0	0	2,655	0	0
TWINCO ROMAX	2,637	0	0	2,637	0	0
ROGERS CORP	2,460	0	0	2,460	8,010	131,000
ROHM & HAAS B5 B6	2,115	0	0	2,115	63,105	0
AGILENT TECHNOLOGIES	2,019	0	0	2,019	215,907	0
PICTSWEET BRIDGEVILLE	1,300	0	0	1,300	0	0
HONEYWELL	918	0	0	918	1,240	71,250
NORAMCO	914	0	0	914	385,703	0
V&S DELAWARE GALVANIZING	519	321	0	840	227,484	373,287
ROHM & HAAS B7 B15	712	0	0	712	9,978	0
DOVER AFB	210	0	0	210	0	0
ORIENT CORP	80	0	0	80	1,571	309,000
CLARIOS BATTERY PLANT	27	11	0	37	1,398,239	0
OWEN STEEL COMPANY	35	0	0	35	11,200	0
KUEHNE	18	0	0	18	0	0
HMA HERITAGE CONCRETE HEALD STREET	0	0	17	17	0	0
HMA HERITAGE CONCRETE BEAR	0	0	13	13	0	0
AEARO TECHNOLOGIES LLC	8	0	0	8	11,609	0
HMA HERITAGE CONCRETE MIDDLETOWN	0	0	8	8	0	0
HMA HERITAGE CONCRETE CHESWOLD	0	0	4	4	0	0
PRINCE MINERALS LLC	2	0	0	2	0	0
DENTSPLY SIRONA MAIN PLANT	1	0	0	1	62	0
METAL MASTERS	1	0	0	1	208,518	0
IKO	0	0	0	0	163	550

Source: DNREC 2019 TRI Database, October, 2020
All amounts are in pounds

APPENDIX E

2019 ON-SITE RELEASE SUMMARY BY FACILITY

FACILITY - RANKED BY TOTAL ON-SITE RELEASE	ON-SITE RELEASES				TRANSFERS	ON-SITE
	TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE	WASTE MGMT.
W.L. GORE	0	0	0	0	7	0
CLARIOS DISTRIBUTION CENTER	0	0	0	0	2,466,524	0
SIMMONS BRIDGEVILLE	0	0	0	0	60,339	0
ALLEN HARIM FOODS MILLSBORO	0	0	0	0	0	0
FUJIFILM	0	0	0	0	0	0
MOUNTAIRE FARMS - SELBYVILLE PLANT	0	0	0	0	0	332,148
PERDUE BRIDGEVILLE	0	0	0	0	0	0
GAC SEAFORD	0	0	0	0	0	0
MOUNTAIRE FARMS - FRANKFORD FEED MILL	0	0	0	0	0	0
PERDUE MILFORD	0	0	0	0	179	358,275
SPI PHARMA	0	0	0	0	0	0
INTERVET INC	0	0	0	0	7	0
AMICK FARMS	0	0	0	0	0	0
BALTIMORE AIRCOIL COMPANY	0	0	0	0	999,621	0
COLOR WORKS PAINTING, INC.	0	0	0	0	0	0
VP RACING FUELS	0	0	0	0	0	0
DUHADAWAY TOOL & DIE SHOP INC	0	0	0	0	16,543	0
Grand Total	**521,593**	**5,396,564**	**6,555**	**5,924,712**	**8,164,469**	**385,628,133**

Source: DNREC 2019 TRI Database, October, 2020
All amounts are in pounds

APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
1,2,4-Trimethylbenzene							
DELAWARE CITY REFINERY	0	647	5	0	652	0	62003
DOVER AFB	0	42	0	0	42	0	0
EDGE MOOR/HAY ROAD ENERGY CENTERS	1	0	0	0	0	0	0
GAC SEAFORD	1	0	0	0	0	0	0
1,2,4-Trimethylbenzene Total	**2**	**689**	**5**	**0**	**694**	**0**	**62,003**
1,3-Butadiene							
DELAWARE CITY REFINERY	0	253	0	0	253	0	174
1,3-Butadiene Total	**0**	**253**	**0**	**0**	**253**	**0**	**174**
4,4'-Methylenebis(2-chloroaniline)							
ROHM & HAAS B5 B6	0	1	0	0	1	1083	0
ROHM & HAAS B7 B15	0	0	0	0	0	203	0
4,4'-Methylenebis(2-chloroaniline) Total	**0**	**1**	**0**	**0**	**1**	**1,286**	**0**
Acetonitrile							
AGILENT TECHNOLOGIES	0	93	0	0	93	19787	0
Acetonitrile Total	**0**	**93**	**0**	**0**	**93**	**19,787**	**0**
Acrylic acid							
CRODA	0	8	0	0	8	2524	0
Acrylic acid Total	**0**	**8**	**0**	**0**	**8**	**2524**	**0**
Ammonia							
CALPINE CORP - GARRISON ENERGY CENTER	0	2950	0	0	2950	0	0
DELAWARE CITY REFINERY	0	67432	2186	0	69618	73	11115922
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	5632	1	0	5633	66	0
HANOVER FOODS	0	8380	0	0	8380	0	0
INDIAN RIVER GENERATING STATION	0	2548	0	0	2548	0	17728
MOUNTAIRE FARMS OF DELAWARE	0	33800	0	760	34560	567	187768
PICTSWEET BRIDGEVILLE	0	1300	0	0	1300	0	0
Ammonia Total	**0**	**122,042**	**2,187**	**760**	**124,989**	**706**	**11,321,418**
Aniline							
BASF COLORS AND EFFECTS USA LLC	0	22	0	0	22	14024	1031
ORIENT CORP	0	78	0	0	78	1571	309000
Aniline Total	**0**	**100**	**0**	**0**	**100**	**15,595**	**310,031**
Anthracene							
DELAWARE CITY REFINERY	0	1	5	0	6	0	0
Anthracene Total	**0**	**1**	**5**	**0**	**6**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020
A "1" in the Form A column indicates a Form A report

All Amounts Are in Pounds

APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Antimony Compounds							
CLARIOS BATTERY PLANT	0	1	0	0	1	5532	0
CLARIOS DISTRIBUTION CENTER	0	0	0	0	0	9807	0
Antimony Compounds Total	**0**	**1**	**0**	**0**	**1**	**15,339**	**0**
Arsenic Compounds							
CLARIOS DISTRIBUTION CENTER	0	0	0	0	0	604	0
Arsenic Compounds Total	**0**	**0**	**0**	**0**	**0**	**604**	**0**
Asbestos (friable)							
DELAWARE CITY REFINERY	0	0	0	0	0	141915	0
Asbestos (friable) Total	**0**	**0**	**0**	**0**	**0**	**141,915**	**0**
Barium Compounds							
PRINCE MINERALS LLC	1	0	0	0	0	0	0
Barium Compounds Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Benzene							
DELAWARE CITY REFINERY	0	4605	9	0	4614	23	626499
Benzene Total	**0**	**4,605**	**9**	**0**	**4,614**	**23**	**626,499**
Benzo(g,h,i)perylene							
DELAWARE CITY REFINERY	0	0	5	0	5	0	452
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	0	0	0	0	0	0
Benzo(g,h,i)perylene Total	**0**	**1**	**5**	**0**	**5**	**0**	**452**
Biphenyl							
BASF COLORS AND EFFECTS USA LLC	0	91	0	0	91	144521	2365
Biphenyl Total	**0**	**91**	**0**	**0**	**91**	**144,521**	**2,365**
Boron trifluoride							
HONEYWELL	0	365	0	0	365	0	71154
Boron trifluoride Total	**0**	**365**	**0**	**0**	**365**	**0**	**71,154**
Carbon disulfide							
DELAWARE CITY REFINERY	0	1271	0	0	1271	0	2656738
Carbon disulfide Total	**0**	**1,271**	**0**	**0**	**1,271**	**0**	**2,656,738**
Carbonyl sulfide							
DELAWARE CITY REFINERY	0	482	0	0	482	0	12373383
Carbonyl sulfide Total	**0**	**482**	**0**	**0**	**482**	**0**	**12,373,383**

Source: DNREC 2019 TRI Database, October, 2020
A "1" in the Form A column indicates a Form A report

All Amounts Are in Pounds

APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Certain Glycol Ethers							
CRODA	0	2	0	0	2	5070	0
DELAWARE CITY REFINERY	0	0	317	0	317	0	0
Certain Glycol Ethers Total	**0**	**2**	**317**	**0**	**319**	**5,070**	**0**
Chlorine							
KUEHNE	0	18	0	0	18	0	0
SPI PHARMA	1	0	0	0	0	0	0
Chlorine Total	**1**	**18**	**0**	**0**	**18**	**0**	**0**
Chlorodifluoromethane							
MESSER LLC	1	0	0	0	0	0	0
Chlorodifluoromethane Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Chromium							
DUHADAWAY TOOL & DIE SHOP INC	0	0	0	0	0	8061	0
HANDYTUBE	0	0	0	0	0	39771	0
METAL MASTERS	0	0	0	0	0	207479	0
Chromium Total	**0**	**0**	**0**	**0**	**0**	**255,311**	**0**
Chromium Compounds							
BALTIMORE AIRCOIL COMPANY	0	0	0	0	0	372277	0
PERDUE BRIDGEVILLE	1	0	0	0	0	0	0
Chromium Compounds Total	**1**	**0**	**0**	**0**	**0**	**372,277**	**0**
Cobalt Compounds							
BALTIMORE AIRCOIL COMPANY	0	0	0	0	0	4736	0
Cobalt Compounds Total	**0**	**0**	**0**	**0**	**0**	**4,736**	**0**
Copper							
ALLEN HARIM FARMS SEAFORD MILL	1	0	0	0	0	0	0
ROGERS CORP	0	10	0	0	10	2310	0
Copper Total	**1**	**10**	**0**	**0**	**10**	**2,310**	**0**
Copper Compounds							
ALLEN HARIM FARMS SEAFORD MILL	1	0	0	0	0	0	0
AMICK FARMS	1	0	0	0	0	0	0
BALTIMORE AIRCOIL COMPANY	0	0	0	0	0	55375	0
MOUNTAIRE FARMS - FRANKFORD FEED MILL	0	0	0	0	0	0	0
MOUNTAIRE FARMS OF DELAWARE	0	0	0	207	207	630	0
PERDUE BRIDGEVILLE	1	0	0	0	0	0	0
Copper Compounds Total	**3**	**0**	**0**	**207**	**207**	**56,005**	**0**

Source: DNREC 2019 TRI Database, October, 2020
A "1" in the Form A column indicates a Form A report

All Amounts Are in Pounds

APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Creosote							
DELAWARE CITY REFINERY	0	7	0	40	47	946	0
Creosote Total	**0**	**7**	**0**	**40**	**47**	**946**	**0**
Cresol (mixed isomers)							
DELAWARE CITY REFINERY	0	0	330	0	330	0	340666
Cresol (mixed isomers) Total	**0**	**0**	**330**	**0**	**330**	**0**	**340,666**
Cumene							
DELAWARE CITY REFINERY	0	282	5	0	287	0	3656
DOVER AFB	0	42	0	0	42	0	0
Cumene Total	**0**	**324**	**5**	**0**	**329**	**0**	**3,656**
Cyanide Compounds							
DELAWARE CITY REFINERY	0	0	145	0	145	0	14379
Cyanide Compounds Total	**0**	**0**	**145**	**0**	**145**	**0**	**14,379**
Cyclohexane							
AIR LIQUIDE ADVANCED SEPARATIONS	0	9177	0	0	9177	29660	0
BASF COLORS AND EFFECTS USA LLC	0	51	0	0	51	18841	3436
DELAWARE CITY REFINERY	0	1678	5	0	1683	18	6981
Cyclohexane Total	**0**	**10,906**	**5**	**0**	**10,911**	**48,519**	**10,417**
Diethanolamine							
CRODA	0	5	0	0	5	2870	0
Diethanolamine Total	**0**	**5**	**0**	**0**	**5**	**2,870**	**0**
Diisocyanates							
AEARO TECHNOLOGIES LLC	0	3	0	0	3	10132	0
ROHM & HAAS B2 B3 B8	0	0	0	0	0	2116	0
ROHM & HAAS B5 B6	0	2	0	0	2	12200	0
Diisocyanates Total	**0**	**5**	**0**	**0**	**5**	**24,448**	**0**
Dioxin and Dioxin-like Compounds							
DELAWARE CITY REFINERY	0.000000	0.001288	0.000000	0.000000	0.001288	0.000000	0.001288
Dioxin and Dioxin-like Compounds Total	**0.000000**	**0.001288**	**0.000000**	**0.000000**	**0.001288**	**0.000000**	**0.001288**
Diphenylamine							
ORIENT CORP	0	0	0	0	0	0	0
Diphenylamine Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Ethylbenzene							
DELAWARE CITY REFINERY	0	1849	5	0	1854	21	53195
DOVER AFB	0	42	0	0	42	0	0
ROGERS CORP	0	500	0	0	500	1000	21000
Ethylbenzene Total	**0**	**2,391**	**5**	**0**	**2,396**	**1,021**	**74,195**
Ethylene							
DELAWARE CITY REFINERY	0	3462	0	0	3462	0	2387
Ethylene Total	**0**	**3,462**	**0**	**0**	**3,462**	**0**	**2,387**
Ethylene glycol							
FUJIFILM	1	0	0	0	0	0	0
HONEYWELL	0	0	0	0	0	200	0
Ethylene glycol Total	**1**	**0**	**0**	**0**	**0**	**200**	**0**
Ethylene oxide							
CRODA	0	1293	0	0	1293	0	396
Ethylene oxide Total	**0**	**1,293**	**0**	**0**	**1,293**	**0**	**396**
Hydrazine							
VEOLIA - RED LION PLANT	0	0	0	0	0	0	0
Hydrazine Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Hydrazine sulfate							
VEOLIA - RED LION PLANT	0	0	0	0	0	0	0
Hydrazine sulfate Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Hydrochloric acid							
DELAWARE CITY REFINERY	0	212	0	0	212	0	106023
INDIAN RIVER GENERATING STATION	0	221	0	0	221	0	169602
Hydrochloric acid Total	**0**	**433**	**0**	**0**	**433**	**0**	**275,625**
Hydrogen cyanide							
DELAWARE CITY REFINERY	0	129759	202	0	129961	0	207115
Hydrogen cyanide Total	**0**	**129,759**	**202**	**0**	**129,961**	**0**	**207,115**
Hydrogen fluoride							
HONEYWELL	0	544	0	0	544	0	96
Hydrogen fluoride Total	**0**	**544**	**0**	**0**	**544**	**0**	**96**

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APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Hydrogen Sulfide							
DELAWARE CITY REFINERY	0	23194	366	0	23560	0	343194315
MOUNTAIRE FARMS OF DELAWARE	0	1053	0	0	1053	0	121204
PERDUE GEORGETOWN	0	3956	0	0	3956	0	86926
VEOLIA - RED LION PLANT	0	172	0	0	172	0	0
Hydrogen Sulfide Total	**0**	**28,375**	**366**	**0**	**28,741**	**0**	**343,402,445**
Lead							
HMA HERITAGE CONCRETE BEAR	0	0	0	13	13	0	0
HMA HERITAGE CONCRETE CHESWOLD	0	0	0	4	4	0	0
HMA HERITAGE CONCRETE HEALD STREET	0	0	0	17	17	0	0
HMA HERITAGE CONCRETE MIDDLETOWN	0	0	0	8	8	0	0
NATIONAL GUARD TRAINING SITE RANGE	0	0	0	5027	5027	0	0
V&S DELAWARE GALVANIZING	0	8	3	0	11	1434	1878
W.L. GORE	0	0	0	0	0	7	0
Lead Total	**0**	**9**	**3**	**5,069**	**5,080**	**1,441**	**1,878**
Lead Compounds							
CLARIOS BATTERY PLANT	0	26	11	0	36	1392706	0
CLARIOS DISTRIBUTION CENTER	0	0	0	0	0	2456114	0
DELAWARE CITY REFINERY	0	83	107	0	190	675	0
INDIAN RIVER GENERATING STATION	0	5	0	231	236	0	0
OWEN STEEL COMPANY	0	0	0	0	0	300	0
VP RACING FUELS	0	0	0	0	0	0	0
Lead Compounds Total	**0**	**114**	**117**	**231**	**462**	**3,849,795**	**0**
Manganese							
ALLEN HARIM FARMS SEAFORD MILL	1	0	0	0	0	0	0
COLOR WORKS PAINTING, INC.	0	0	0	0	0	0	0
HANDYTUBE	0	0	0	0	0	3773	0
Manganese Total	**1**	**0**	**0**	**0**	**0**	**3,773**	**0**
Manganese Compounds							
ALLEN HARIM FARMS SEAFORD MILL	1	0	0	0	0	0	0
AMICK FARMS	1	0	0	0	0	0	0
BALTIMORE AIRCOIL COMPANY	0	0	0	0	0	90156	0
MOUNTAIRE FARMS - FRANKFORD FEED MILL	0	0	0	0	0	0	0
MOUNTAIRE FARMS OF DELAWARE	0	0	0	0	0	0	0
OWEN STEEL COMPANY	0	34	0	0	34	3400	0
PRINCE MINERALS LLC	0	2	0	0	2	0	0
Manganese Compounds Total	**2**	**36**	**0**	**0**	**36**	**93,556**	**0**

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APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Mercury							
DENTSPLY SIRONA MAIN PLANT	0.0000	0.6800	0.0000	0.0000	0.6800	61.9200	0.0000
Mercury Total	**0.0000**	**0.6800**	**0.0000**	**0.0000**	**0.6800**	**61.9200**	**0.0000**
Mercury Compounds							
DELAWARE CITY REFINERY	0.0000	104.0000	0.7500	0.0000	104.7500	0.1625	0.0000
INDIAN RIVER GENERATING STATION	0.0000	0.8000	0.0000	22.4000	23.2000	0.0000	0.0000
INTERVET INC	0.0000	0.0000	0.0000	0.0000	0.0000	7.2786	0.0000
Mercury Compounds Total	**0.0000**	**104.8000**	**0.7500**	**22.4000**	**127.9500**	**7.4411**	**0.0000**
Methanol							
AGILENT TECHNOLOGIES	0	1879	0	0	1879	54532	0
AIR LIQUIDE ADVANCED SEPARATIONS	0	5	0	0	5	94507	2983147
BASF COLORS AND EFFECTS USA LLC	0	31060	0	0	31060	887526	1149229
CRODA	0	665	0	0	665	6243	0
DENTSPLY SIRONA WEST PLANT	0	1983	0	0	1983	8735	0
HONEYWELL	0	9	0	0	9	1040	0
NORAMCO	0	115	0	0	115	33891	0
TWINCO ROMAX	0	2637	0	0	2637	0	0
Methanol Total	**0**	**38,353**	**0**	**0**	**38,353**	**1,086,473**	**4,132,376**
Methyl methacrylate							
DENTSPLY SIRONA WEST PLANT	0	3795	0	0	3795	183	0
Methyl methacrylate Total	**0**	**3,795**	**0**	**0**	**3,795**	**183**	**0**
Molybdenum trioxide							
DELAWARE CITY REFINERY	0	14	0	0	14	16	0
Molybdenum trioxide Total	**0**	**14**	**0**	**0**	**14**	**16**	**0**
N,N-Dimethylformamide							
AIR LIQUIDE ADVANCED SEPARATIONS	0	31	0	0	31	24150	0
ROHM & HAAS B2 B3 B8	0	4468	0	0	4468	396003	4991547
N,N-Dimethylformamide Total	**0**	**4,499**	**0**	**0**	**4,499**	**420,153**	**4,991,547**
Naphthalene							
CRODA	0	1	0	0	1	854	0
DELAWARE CITY REFINERY	0	1737	5	0	1742	0	11641
DOVER AFB	0	42	0	0	42	0	0
EDGE MOOR/HAY ROAD ENERGY CENTERS	1	0	0	0	0	0	0
Naphthalene Total	**1**	**1,780**	**5**	**0**	**1,785**	**854**	**11,641**

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APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
n-Butyl alcohol							
CRODA	0	78	0	0	78	577	0
NORAMCO	0	46	0	0	46	224969	0
n-Butyl alcohol Total	**0**	**124**	**0**	**0**	**124**	**225,546**	**0**
n-Hexane							
AIR LIQUIDE ADVANCED SEPARATIONS	0	29	0	0	29	5	1348798
DELAWARE CITY REFINERY	0	12510	5	0	12515	0	144929
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	3116	0	0	3116	0	0
n-Hexane Total	**0**	**15,655**	**5**	**0**	**15,660**	**5**	**1,493,727**
Nickel							
DUHADAWAY TOOL & DIE SHOP INC	0	0	0	0	0	8482	0
HANDYTUBE	0	0	0	0	0	43311	0
METAL MASTERS	0	1	0	0	1	1039	0
Nickel Total	**0**	**1**	**0**	**0**	**1**	**52,832**	**0**
Nickel Compounds							
BALTIMORE AIRCOIL COMPANY	0	0	0	0	0	477077	0
DELAWARE CITY REFINERY	0	1780	396	0	2176	40	0
OWEN STEEL COMPANY	0	1	0	0	1	7500	0
PRINCE MINERALS LLC	1	0	0	0	0	0	0
Nickel Compounds Total	**1**	**1,781**	**396**	**0**	**2,177**	**484,617**	**0**
Nitrate Compounds							
ALLEN HARIM FOODS HARBESON	0	0	73217	0	73217	0	0
BASF COLORS AND EFFECTS USA LLC	0	0	0	0	0	23779	0
DELAWARE CITY REFINERY	0	0	4971458	0	4971458	0	0
PERDUE GEORGETOWN	0	0	347086	0	347086	122	0
SIMMONS BRIDGEVILLE	0	0	0	0	0	60339	0
Nitrate Compounds Total	**0**	**0**	**5,391,761**	**0**	**5,391,761**	**84,240**	**0**
Nitric acid							
BASF COLORS AND EFFECTS USA LLC	0	0	0	0	0	0	24162
SPI PHARMA	1	0	0	0	0	0	0
Nitric acid Total	**1**	**0**	**0**	**0**	**0**	**0**	**24,162**
Nitrobenzene							
ORIENT CORP	0	2	0	0	2	0	0
Nitrobenzene Total	**0**	**2**	**0**	**0**	**2**	**0**	**0**

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APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
N-Methyl-2-pyrrolidone							
AIR LIQUIDE ADVANCED SEPARATIONS	0	1184	0	0	1184	76709	0
BASF COLORS AND EFFECTS USA LLC	0	0	0	0	0	69488	13
ROHM & HAAS B5 B6	0	2112	0	0	2112	49822	0
ROHM & HAAS B7 B15	0	712	0	0	712	9775	0
N-Methyl-2-pyrrolidone Total	**0**	**4,008**	**0**	**0**	**4,008**	**205,794**	**13**
Nonylphenol							
CRODA	0	3195	0	0	3195	12060	0
Nonylphenol Total	**0**	**3,195**	**0**	**0**	**3,195**	**12,060**	**0**
Nonylphenol Ethoxylates							
CRODA	0	0	0	0	0	1295	0
Nonylphenol Ethoxylates Total	**0**	**0**	**0**	**0**	**0**	**1295**	**0**
p-Chloroaniline							
BASF COLORS AND EFFECTS USA LLC	0	7	0	0	7	7691	421
p-Chloroaniline Total	**0**	**7**	**0**	**0**	**7**	**7,691**	**421**
Peracetic acid							
ALLEN HARIM FOODS HARBESON	1	0	0	0	0	0	0
ALLEN HARIM FOODS MILLSBORO	1	0	0	0	0	0	0
MOUNTAIRE FARMS - SELBYVILLE PLANT	0	0	0	0	0	0	332148
MOUNTAIRE FARMS OF DELAWARE	0	0	0	0	0	0	561416
PERDUE GEORGETOWN	0	0	184	0	184	0	368742
PERDUE MILFORD	0	0	0	0	0	179	358275
Peracetic acid Total	**2**	**0**	**184**	**0**	**184**	**179**	**1,620,581**
Phenanthrene							
DELAWARE CITY REFINERY	0	3	5	0	8	0	40
Phenanthrene Total	**0**	**3**	**5**	**0**	**8**	**0**	**40**
Phenol							
DELAWARE CITY REFINERY	0	94	165	0	259	0	346971
Phenol Total	**0**	**94**	**165**	**0**	**259**	**0**	**346,971**
Polycyclic Aromatic Compounds							
DELAWARE CITY REFINERY	0	237	4	0	241	0	372
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	6	0	0	6	0	0
IKO	0	0	0	0	0	163	550
Polycyclic Aromatic Compounds Total	**0**	**244**	**4**	**0**	**247**	**163**	**922**

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APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Propylene							
DELAWARE CITY REFINERY	0	3558	0	0	3558	0	14716
Propylene Total	**0**	**3,558**	**0**	**0**	**3,558**	**0**	**14,716**
Propylene oxide							
CRODA	0	210	0	0	210	20	782
Propylene oxide Total	**0**	**210**	**0**	**0**	**210**	**20**	**782**
Selenium Compounds							
PERDUE BRIDGEVILLE	1	0	0	0	0	0	0
Selenium Compounds Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**
Styrene							
DELAWARE CITY REFINERY	0	7	5	0	12	18	1127
JUSTIN TANKS	0	11166	0	0	11166	5406	34272
Styrene Total	**0**	**11,173**	**5**	**0**	**11,178**	**5,424**	**35,399**
Sulfuric acid							
DELAWARE CITY REFINERY	0	98117	0	0	98117	0	0
INDIAN RIVER GENERATING STATION	0	451	0	0	451	0	254701
VEOLIA - RED LION PLANT	0	2482	0	0	2482	0	0
Sulfuric acid Total	**0**	**101,050**	**0**	**0**	**101,050**	**0**	**254,701**
Tetrachloroethylene							
DELAWARE CITY REFINERY	0	12	0	0	12	0	0
Tetrachloroethylene Total	**0**	**12**	**0**	**0**	**12**	**0**	**0**
Toluene							
AGILENT TECHNOLOGIES	0	47	0	0	47	141588	0
DELAWARE CITY REFINERY	0	7840	5	0	7845	29	242638
NORAMCO	0	753	0	0	753	126843	0
VP RACING FUELS	1	0	0	0	0	0	0
Toluene Total	**1**	**8,640**	**5**	**0**	**8,645**	**268,460**	**242,638**
Toluene diisocyanate (mixed isomers)							
AEARO TECHNOLOGIES LLC	0	5	0	0	5	1477	0
Toluene diisocyanate (mixed isomers) Total	**0**	**5**	**0**	**0**	**5**	**1,477**	**0**
Trichloroethylene							
HANDYTUBE	0	4420	0	0	4420	8965	0
Trichloroethylene Total	**0**	**4,420**	**0**	**0**	**4,420**	**8,965**	**0**

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APPENDIX F

2019 ON-SITE RELEASES BY CHEMICAL AND FACILITY

FACILITY/CHEMICAL	FORM A	ON-SITE RELEASES TO AIR	ON-SITE RELEASES TO WATER	ON-SITE RELEASES TO LAND	ON-SITE RELEASES TOTAL	OFF-SITE TRANSFERS	ON-SITE WASTE MANAGEMENT
Xylene (mixed isomers)							
BASF COLORS AND EFFECTS USA LLC	0	930	0	0	930	500	4333
DELAWARE CITY REFINERY	0	7739	5	0	7744	67	214283
DOVER AFB	0	42	0	0	42	0	0
ROGERS CORP	0	1950	0	0	1950	4700	110000
Xylene (mixed isomers) Total	**0**	**10,661**	**5**	**0**	**10,666**	**5,267**	**328,616**
Zinc Compounds							
ALLEN HARIM FARMS SEAFORD MILL	1	0	0	0	0	0	0
AMICK FARMS	1	0	0	0	0	0	0
MOUNTAIRE FARMS - FRANKFORD FEED MILL	0	0	0	0	0	0	0
MOUNTAIRE FARMS OF DELAWARE	0	0	0	225	225	2058	0
PERDUE BRIDGEVILLE	1	0	0	0	0	0	0
V&S DELAWARE GALVANIZING	0	511	318	0	829	226050	371409
Zinc Compounds Total	**3**	**511**	**318**	**225**	**1,054**	**228,108**	**371,409**
Grand Total	**24**	**521,593**	**5,396,564**	**6,555**	**5,924,712**	**8,164,469**	**385,628,133**

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APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
CHEMICAL/FACILITY	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
1,2,4-Trimethylbenzene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	62,003	62,003
DOVER AFB	0	0	0	0	0	0	0	0	0	0
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	0	0	0	0	0	0	0	0	0
GAC SEAFORD	0	0	0	0	0	0	0	0	0	0
1,2,4-Trimethylbenzene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**62,003**	**62,003**
1,3-Butadiene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	174	174
1,3-Butadiene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**174**	**174**
4,4'-Methylenebis(2-chloroaniline)										
ROHM & HAAS B5 B6	0	0	0	1,083	0	1,083	0	0	0	0
ROHM & HAAS B7 B15	0	0	0	203	0	203	0	0	0	0
4,4'-Methylenebis(2-chloroaniline) Total	**0**	**0**	**0**	**1,286**	**0**	**1,286**	**0**	**0**	**0**	**0**
Acetonitrile										
AGILENT TECHNOLOGIES	0	0	19,787	0	0	19,787	0	0	0	0
Acetonitrile Total	**0**	**0**	**19,787**	**0**	**0**	**19,787**	**0**	**0**	**0**	**0**
Acrylic acid										
CRODA	2,524	0	0	0	0	2,524	0	0	0	0
Acrylic acid Total	**2,524**	**0**	**0**	**0**	**0**	**2,524**	**0**	**0**	**0**	**0**
Ammonia										
CALPINE CORP - GARRISON ENERGY CENTE	0	0	0	0	0	0	0	0	0	0
DELAWARE CITY REFINERY	0	0	0	0	73	73	0	11,023,195	92,727	11,115,922
EDGE MOOR/HAY ROAD ENERGY CENTERS	66	0	0	0	0	66	0	0	0	0
HANOVER FOODS	0	0	0	0	0	0	0	0	0	0
INDIAN RIVER GENERATING STATION	0	0	0	0	0	0	0	0	17,728	17,728
MOUNTAIRE FARMS OF DELAWARE	0	544	0	0	23	567	0	0	187,768	187,768
PICTSWEET BRIDGEVILLE	0	0	0	0	0	0	0	0	0	0
Ammonia Total	**66**	**544**	**0**	**0**	**96**	**706**	**0**	**11,023,195**	**298,223**	**11,321,418**
Aniline										
BASF COLORS AND EFFECTS USA LLC	10,759	0	2,655	610	0	14,024	0	0	1,031	1,031
ORIENT CORP	1,500	0	0	0	71	1,571	220,000	0	89,000	309,000
Aniline Total	**12,259**	**0**	**2,655**	**610**	**71**	**15,595**	**220,000**	**0**	**90,031**	**310,031**
Anthracene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	0	0
Anthracene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Antimony Compounds										
CLARIOS BATTERY PLANT	0	5,519	0	0	14	5,532	0	0	0	0
CLARIOS DISTRIBUTION CENTER	0	9,807	0	0	0	9,807	0	0	0	0
Antimony Compounds Total	**0**	**15,325**	**0**	**0**	**14**	**15,339**	**0**	**0**	**0**	**0**
Arsenic Compounds										
CLARIOS DISTRIBUTION CENTER	0	604	0	0	0	604	0	0	0	0
Arsenic Compounds Total	**0**	**604**	**0**	**0**	**0**	**604**	**0**	**0**	**0**	**0**
Asbestos (friable)										
DELAWARE CITY REFINERY	0	0	0	0	141,915	141,915	0	0	0	0
Asbestos (friable) Total	**0**	**0**	**0**	**0**	**141,915**	**141,915**	**0**	**0**	**0**	**0**
Barium Compounds										
PRINCE MINERALS LLC	0	0	0	0	0	0	0	0	0	0
Barium Compounds Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Benzene										
DELAWARE CITY REFINERY	0	17	0	0	6	23	0	454,728	171,771	626,499
Benzene Total	**0**	**17**	**0**	**0**	**6**	**23**	**0**	**454,728**	**171,771**	**626,499**
Benzo(g,h,i)perylene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	452	452
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	0	0	0	0	0	0	0	0	0
Benzo(g,h,i)perylene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**452**	**452**
Biphenyl										
BASF COLORS AND EFFECTS USA LLC	9,442	0	131,163	3,916	0	144,521	0	0	2,365	2,365
Biphenyl Total	**9,442**	**0**	**131,163**	**3,916**	**0**	**144,521**	**0**	**0**	**2,365**	**2,365**
Boron trifluoride										
HONEYWELL	0	0	0	0	0	0	0	0	71,154	71,154
Boron trifluoride Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**71,154**	**71,154**
Carbon disulfide										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	125,252	2,531,486	2,656,738
Carbon disulfide Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**125,252**	**2,531,486**	**2,656,738**
Carbonyl sulfide										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	12,373,383	12,373,383
Carbonyl sulfide Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12,373,383**	**12,373,383**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
CHEMICAL/FACILITY	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Certain Glycol Ethers										
CRODA	5,070	0	0	0	0	5,070	0	0	0	0
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	0	0
Certain Glycol Ethers Total	**5,070**	**0**	**0**	**0**	**0**	**5,070**	**0**	**0**	**0**	**0**
Chlorine										
KUEHNE	0	0	0	0	0	0	0	0	0	0
SPI PHARMA	0	0	0	0	0	0	0	0	0	0
Chlorine Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Chlorodifluoromethane										
MESSER LLC	0	0	0	0	0	0	0	0	0	0
Chlorodifluoromethane Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Chromium										
DUHADAWAY TOOL & DIE SHOP INC	0	7,981	0	0	80	8,061	0	0	0	0
HANDYTUBE	0	39,550	0	0	221	39,771	0	0	0	0
METAL MASTERS	0	206,729	0	0	750	207,479	0	0	0	0
Chromium Total	**0**	**254,260**	**0**	**0**	**1,051**	**255,311**	**0**	**0**	**0**	**0**
Chromium Compounds										
BALTIMORE AIRCOIL COMPANY	0	371,827	0	0	450	372,277	0	0	0	0
PERDUE BRIDGEVILLE	0	0	0	0	0	0	0	0	0	0
Chromium Compounds Total	**0**	**371,827**	**0**	**0**	**450**	**372,277**	**0**	**0**	**0**	**0**
Cobalt Compounds										
BALTIMORE AIRCOIL COMPANY	0	4,730	0	0	6	4,736	0	0	0	0
Cobalt Compounds Total	**0**	**4,730**	**0**	**0**	**6**	**4,736**	**0**	**0**	**0**	**0**
Copper										
ALLEN HARIM FARMS SEAFORD MILL	0	0	0	0	0	0	0	0	0	0
ROGERS CORP	5	2,300	0	0	5	2,310	0	0	0	0
Copper Total	**5**	**2,300**	**0**	**0**	**5**	**2,310**	**0**	**0**	**0**	**0**
Copper Compounds										
ALLEN HARIM FARMS SEAFORD MILL	0	0	0	0	0	0	0	0	0	0
AMICK FARMS	0	0	0	0	0	0	0	0	0	0
BALTIMORE AIRCOIL COMPANY	0	55,309	0	0	66	55,375	0	0	0	0
MOUNTAIRE FARMS - FRANKFORD FEED MIL	0	0	0	0	0	0	0	0	0	0
MOUNTAIRE FARMS OF DELAWARE	0	25	0	0	605	630	0	0	0	0
PERDUE BRIDGEVILLE	0	0	0	0	0	0	0	0	0	0
Copper Compounds Total	**0**	**55,334**	**0**	**0**	**671**	**56,005**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Creosote										
DELAWARE CITY REFINERY	0	0	0	0	946	946	0	0	0	0
Creosote Total	**0**	**0**	**0**	**0**	**946**	**946**	**0**	**0**	**0**	**0**
Cresol (mixed isomers)										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	23,579	317,087	340,666
Cresol (mixed isomers) Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**23,579**	**317,087**	**340,666**
Cumene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	3,656	3,656
DOVER AFB	0	0	0	0	0	0	0	0	0	0
Cumene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3,656**	**3,656**
Cyanide Compounds										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	14,379	14,379
Cyanide Compounds Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14,379**	**14,379**
Cyclohexane										
AIR LIQUIDE ADVANCED SEPARATIONS	0	0	29,660	0	0	29,660	0	0	0	0
BASF COLORS AND EFFECTS USA LLC	0	18,841	0	0	0	18,841	0	0	3,436	3,436
DELAWARE CITY REFINERY	0	18	0	0	0	18	0	0	6,981	6,981
Cyclohexane Total	**0**	**18,859**	**29,660**	**0**	**0**	**48,519**	**0**	**0**	**10,417**	**10,417**
Diethanolamine										
CRODA	2,870	0	0	0	0	2,870	0	0	0	0
Diethanolamine Total	**2,870**	**0**	**0**	**0**	**0**	**2,870**	**0**	**0**	**0**	**0**
Diisocyanates										
AEARO TECHNOLOGIES LLC	0	0	0	10,132	0	10,132	0	0	0	0
ROHM & HAAS B2 B3 B8	0	0	0	2,116	0	2,116	0	0	0	0
ROHM & HAAS B5 B6	0	0	0	12,200	0	12,200	0	0	0	0
Diisocyanates Total	**0**	**0**	**0**	**24,448**	**0**	**24,448**	**0**	**0**	**0**	**0**
Dioxin and Dioxin-like Compounds										
DELAWARE CITY REFINERY	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.001288	0.001288
Dioxin and Dioxin-like Compounds Total	**0.000000**	**0.000000**	**0.000000**	**0.000000**	**0.000000**	**0.000000**	**0.000000**	**0.000000**	**0.001288**	**0.001288**
Diphenylamine										
ORIENT CORP	0	0	0	0	0	0	0	0	0	0
Diphenylamine Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

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APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Ethylbenzene										
DELAWARE CITY REFINERY	0	21	0	0	0	21	0	0	53,195	53,195
DOVER AFB	0	0	0	0	0	0	0	0	0	0
ROGERS CORP	0	0	0	1,000	0	1,000	0	0	21,000	21,000
Ethylbenzene Total	**0**	**21**	**0**	**1,000**	**0**	**1,021**	**0**	**0**	**74,195**	**74,195**
Ethylene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	2,387	2,387
Ethylene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,387**	**2,387**
Ethylene glycol										
FUJIFILM	0	0	0	0	0	0	0	0	0	0
HONEYWELL	0	0	200	0	0	200	0	0	0	0
Ethylene glycol Total	**0**	**0**	**200**	**0**	**0**	**200**	**0**	**0**	**0**	**0**
Ethylene oxide										
CRODA	0	0	0	0	0	0	0	0	396	396
Ethylene oxide Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**396**	**396**
Hydrazine										
VEOLIA - RED LION PLANT	0	0	0	0	0	0	0	0	0	0
Hydrazine Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Hydrazine sulfate										
VEOLIA - RED LION PLANT	0	0	0	0	0	0	0	0	0	0
Hydrazine sulfate Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Hydrochloric acid										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	106,023	106,023
INDIAN RIVER GENERATING STATION	0	0	0	0	0	0	0	0	169,602	169,602
Hydrochloric acid Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**275,625**	**275,625**
Hydrogen cyanide										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	207,115	207,115
Hydrogen cyanide Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**207,115**	**207,115**
Hydrogen fluoride										
HONEYWELL	0	0	0	0	0	0	0	0	96	96
Hydrogen fluoride Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**96**	**96**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
CHEMICAL/FACILITY	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Hydrogen Sulfide										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	343,194,315	343,194,315
MOUNTAIRE FARMS OF DELAWARE	0	0	0	0	0	0	0	0	121,204	121,204
PERDUE GEORGETOWN	0	0	0	0	0	0	0	0	86,926	86,926
VEOLIA - RED LION PLANT	0	0	0	0	0	0	0	0	0	0
Hydrogen Sulfide Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**343,402,445**	**343,402,445**
Lead										
HMA HERITAGE CONCRETE BEAR	0	0	0	0	0	0	0	0	0	0
HMA HERITAGE CONCRETE CHESWOLD	0	0	0	0	0	0	0	0	0	0
HMA HERITAGE CONCRETE HEALD STREET	0	0	0	0	0	0	0	0	0	0
HMA HERITAGE CONCRETE MIDDLETOWN	0	0	0	0	0	0	0	0	0	0
NATIONAL GUARD TRAINING SITE RANGE	0	0	0	0	0	0	0	0	0	0
V&S DELAWARE GALVANIZING	0	1,143	0	0	292	1,434	1,878	0	0	1,878
W.L. GORE	0	0	0	0	7	7	0	0	0	0
Lead Total	**0**	**1,143**	**0**	**0**	**298**	**1,441**	**1,878**	**0**	**0**	**1,878**
Lead Compounds										
CLARIOS BATTERY PLANT	0	1,382,845	0	0	9,861	1,392,706	0	0	0	0
CLARIOS DISTRIBUTION CENTER	2	2,455,172	0	0	940	2,456,114	0	0	0	0
DELAWARE CITY REFINERY	0	659	0	0	16	675	0	0	0	0
INDIAN RIVER GENERATING STATION	0	0	0	0	0	0	0	0	0	0
OWEN STEEL COMPANY	0	300	0	0	0	300	0	0	0	0
VP RACING FUELS	0	0	0	0	0	0	0	0	0	0
Lead Compounds Total	**2**	**3,838,976**	**0**	**0**	**10,817**	**3,849,795**	**0**	**0**	**0**	**0**
Manganese										
ALLEN HARIM FARMS SEAFORD MILL	0	0	0	0	0	0	0	0	0	0
COLOR WORKS PAINTING, INC.	0	0	0	0	0	0	0	0	0	0
HANDYTUBE	0	3,754	0	0	19	3,773	0	0	0	0
Manganese Total	**0**	**3,754**	**0**	**0**	**19**	**3,773**	**0**	**0**	**0**	**0**
Manganese Compounds										
ALLEN HARIM FARMS SEAFORD MILL	0	0	0	0	0	0	0	0	0	0
AMICK FARMS	0	0	0	0	0	0	0	0	0	0
BALTIMORE AIRCOIL COMPANY	0	90,047	0	0	109	90,156	0	0	0	0
MOUNTAIRE FARMS - FRANKFORD FEED MIL	0	0	0	0	0	0	0	0	0	0
MOUNTAIRE FARMS OF DELAWARE	0	0	0	0	0	0	0	0	0	0
OWEN STEEL COMPANY	0	3,400	0	0	0	3,400	0	0	0	0
PRINCE MINERALS LLC	0	0	0	0	0	0	0	0	0	0
Manganese Compounds Total	**0**	**93,447**	**0**	**0**	**109**	**93,556**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Mercury										
DENTSPLY SIRONA MAIN PLANT	0.0000	61.9200	0.0000	0.0000	0.0000	61.9200	0.0000	0.0000	0.0000	0.0000
Mercury Total	**0.0000**	**61.9200**	**0.0000**	**0.0000**	**0.0000**	**61.9200**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
Mercury Compounds										
DELAWARE CITY REFINERY	0.0000	0.1563	0.0000	0.0000	0.0062	0.1625	0.0000	0.0000	0.0000	0.0000
INDIAN RIVER GENERATING STATION	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
INTERVET INC	0.0000	6.0000	0.0000	0.0000	1.2786	7.2786	0.0000	0.0000	0.0000	0.0000
Mercury Compounds Total	**0.0000**	**6.1563**	**0.0000**	**0.0000**	**1.2848**	**7.4411**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
Methanol										
AGILENT TECHNOLOGIES	0	0	54,451	81	0	54,532	0	0	0	0
AIR LIQUIDE ADVANCED SEPARATIONS	0	0	0	94,507	0	94,507	2,983,147	0	0	2,983,147
BASF COLORS AND EFFECTS USA LLC	356,704	494,671	16,961	19,190	0	887,526	329,345	0	819,884	1,149,229
CRODA	730	0	0	5,513	0	6,243	0	0	0	0
DENTSPLY SIRONA WEST PLANT	71	0	8,664	0	0	8,735	0	0	0	0
HONEYWELL	80	0	320	0	640	1,040	0	0	0	0
NORAMCO	1,695	0	32,196	0	0	33,891	0	0	0	0
TWINCO ROMAX	0	0	0	0	0	0	0	0	0	0
Methanol Total	**359,280**	**494,671**	**112,592**	**119,291**	**640**	**1,086,473**	**3,312,492**	**0**	**819,884**	**4,132,376**
Methyl methacrylate										
DENTSPLY SIRONA WEST PLANT	64	0	119	0	0	183	0	0	0	0
Methyl methacrylate Total	**64**	**0**	**119**	**0**	**0**	**183**	**0**	**0**	**0**	**0**
Molybdenum trioxide										
DELAWARE CITY REFINERY	0	0	0	16	0	16	0	0	0	0
Molybdenum trioxide Total	**0**	**0**	**0**	**16**	**0**	**16**	**0**	**0**	**0**	**0**
N,N-Dimethylformamide										
AIR LIQUIDE ADVANCED SEPARATIONS	23,400	0	750	0	0	24,150	0	0	0	0
ROHM & HAAS B2 B3 B8	249,107	0	101,476	45,420	0	396,003	4,991,209	0	338	4,991,547
N,N-Dimethylformamide Total	**272,507**	**0**	**102,226**	**45,420**	**0**	**420,153**	**4,991,209**	**0**	**338**	**4,991,547**
Naphthalene										
CRODA	8	0	0	845	0	854	0	0	0	0
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	11,641	11,641
DOVER AFB	0	0	0	0	0	0	0	0	0	0
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	0	0	0	0	0	0	0	0	0
Naphthalene Total	**8**	**0**	**0**	**845**	**0**	**854**	**0**	**0**	**11,641**	**11,641**

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All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
n-Butyl alcohol										
CRODA	577	0	0	0	0	577	0	0	0	0
NORAMCO	11,248	0	213,721	0	0	224,969	0	0	0	0
n-Butyl alcohol Total	**11,825**	**0**	**213,721**	**0**	**0**	**225,546**	**0**	**0**	**0**	**0**
n-Hexane										
AIR LIQUIDE ADVANCED SEPARATIONS	0	0	5	0	0	5	1,348,798	0	0	1,348,798
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	144,929	144,929
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	0	0	0	0	0	0	0	0	0
n-Hexane Total	**0**	**0**	**5**	**0**	**0**	**5**	**1,348,798**	**0**	**144,929**	**1,493,727**
Nickel										
DUHADAWAY TOOL & DIE SHOP INC	0	8,398	0	0	84	8,482	0	0	0	0
HANDYTUBE	0	42,986	0	0	325	43,311	0	0	0	0
METAL MASTERS	0	750	0	0	289	1,039	0	0	0	0
Nickel Total	**0**	**52,134**	**0**	**0**	**698**	**52,832**	**0**	**0**	**0**	**0**
Nickel Compounds										
BALTIMORE AIRCOIL COMPANY	0	476,504	0	0	573	477,077	0	0	0	0
DELAWARE CITY REFINERY	0	40	0	0	0	40	0	0	0	0
OWEN STEEL COMPANY	0	7,500	0	0	0	7,500	0	0	0	0
PRINCE MINERALS LLC	0	0	0	0	0	0	0	0	0	0
Nickel Compounds Total	**0**	**484,044**	**0**	**0**	**573**	**484,617**	**0**	**0**	**0**	**0**
Nitrate Compounds										
ALLEN HARIM FOODS HARBESON	0	0	0	0	0	0	0	0	0	0
BASF COLORS AND EFFECTS USA LLC	23,779	0	0	0	0	23,779	0	0	0	0
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	0	0
PERDUE GEORGETOWN	0	0	0	0	122	122	0	0	0	0
SIMMONS BRIDGEVILLE	60,339	0	0	0	0	60,339	0	0	0	0
Nitrate Compounds Total	**84,118**	**0**	**0**	**0**	**122**	**84,240**	**0**	**0**	**0**	**0**
Nitric acid										
BASF COLORS AND EFFECTS USA LLC	0	0	0	0	0	0	0	0	24,162	24,162
SPI PHARMA	0	0	0	0	0	0	0	0	0	0
Nitric acid Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**24,162**	**24,162**
Nitrobenzene										
ORIENT CORP	0	0	0	0	0	0	0	0	0	0
Nitrobenzene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
N-Methyl-2-pyrrolidone										
AIR LIQUIDE ADVANCED SEPARATIONS	57,609	0	19,100	0	0	76,709	0	0	0	0
BASF COLORS AND EFFECTS USA LLC	0	0	0	69,488	0	69,488	0	0	13	13
ROHM & HAAS B5 B6	0	47,975	0	591	1,256	49,822	0	0	0	0
ROHM & HAAS B7 B15	0	9,358	0	197	220	9,775	0	0	0	0
N-Methyl-2-pyrrolidone Total	**57,609**	**57,333**	**19,100**	**70,276**	**1,476**	**205,794**	**0**	**0**	**13**	**13**
Nonylphenol										
CRODA	12,060	0	0	0	0	12,060	0	0	0	0
Nonylphenol Total	**12,060**	**0**	**0**	**0**	**0**	**12,060**	**0**	**0**	**0**	**0**
Nonylphenol Ethoxylates										
CRODA	1,295	0	0	0	0	1,295	0	0	0	0
Nonylphenol Ethoxylates Total	**1,295**	**0**	**0**	**0**	**0**	**1,295**	**0**	**0**	**0**	**0**
p-Chloroaniline										
BASF COLORS AND EFFECTS USA LLC	3,177	0	4,405	109	0	7,691	0	0	421	421
p-Chloroaniline Total	**3,177**	**0**	**4,405**	**109**	**0**	**7,691**	**0**	**0**	**421**	**421**
Peracetic acid										
ALLEN HARIM FOODS HARBESON	0	0	0	0	0	0	0	0	0	0
ALLEN HARIM FOODS MILLSBORO	0	0	0	0	0	0	0	0	0	0
MOUNTAIRE FARMS - SELBYVILLE PLANT	0	0	0	0	0	0	0	0	332,148	332,148
MOUNTAIRE FARMS OF DELAWARE	0	0	0	0	0	0	0	0	561,416	561,416
PERDUE GEORGETOWN	0	0	0	0	0	0	0	0	368,742	368,742
PERDUE MILFORD	179	0	0	0	0	179	0	0	358,275	358,275
Peracetic acid Total	**179**	**0**	**0**	**0**	**0**	**179**	**0**	**0**	**1,620,581**	**1,620,581**
Phenanthrene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	40	40
Phenanthrene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**40**	**40**
Phenol										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	66,497	280,474	346,971
Phenol Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**66,497**	**280,474**	**346,971**
Polycyclic Aromatic Compounds										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	372	372
EDGE MOOR/HAY ROAD ENERGY CENTERS	0	0	0	0	0	0	0	0	0	0
IKO	0	163	0	0	0	163	550	0	0	550
Polycyclic Aromatic Compounds Total	**0**	**163**	**0**	**0**	**0**	**163**	**550**	**0**	**372**	**922**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Propylene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	14,716	14,716
Propylene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14,716**	**14,716**
Propylene oxide										
CRODA	0	0	0	20	0	20	0	0	782	782
Propylene oxide Total	**0**	**0**	**0**	**20**	**0**	**20**	**0**	**0**	**782**	**782**
Selenium Compounds										
PERDUE BRIDGEVILLE	0	0	0	0	0	0	0	0	0	0
Selenium Compounds Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Styrene										
DELAWARE CITY REFINERY	0	18	0	0	0	18	0	0	1,127	1,127
JUSTIN TANKS	0	0	0	5,406	0	5,406	34,272	0	0	34,272
Styrene Total	**0**	**18**	**0**	**5,406**	**0**	**5,424**	**34,272**	**0**	**1,127**	**35,399**
Sulfuric acid										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	0	0
INDIAN RIVER GENERATING STATION	0	0	0	0	0	0	0	0	254,701	254,701
VEOLIA - RED LION PLANT	0	0	0	0	0	0	0	0	0	0
Sulfuric acid Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**254,701**	**254,701**
Tetrachloroethylene										
DELAWARE CITY REFINERY	0	0	0	0	0	0	0	0	0	0
Tetrachloroethylene Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Toluene										
AGILENT TECHNOLOGIES	0	0	141,108	480	0	141,588	0	0	0	0
DELAWARE CITY REFINERY	0	25	0	0	4	29	0	0	242,638	242,638
NORAMCO	1,268	0	125,575	0	0	126,843	0	0	0	0
VP RACING FUELS	0	0	0	0	0	0	0	0	0	0
Toluene Total	**1,268**	**25**	**266,683**	**480**	**4**	**268,460**	**0**	**0**	**242,638**	**242,638**
Toluene diisocyanate (mixed isomers)										
AEARO TECHNOLOGIES LLC	0	0	0	1,477	0	1,477	0	0	0	0
Toluene diisocyanate (mixed isomers) Total	**0**	**0**	**0**	**1,477**	**0**	**1,477**	**0**	**0**	**0**	**0**
Trichloroethylene										
HANDYTUBE	0	0	0	8,965	0	8,965	0	0	0	0
Trichloroethylene Total	**0**	**0**	**0**	**8,965**	**0**	**8,965**	**0**	**0**	**0**	**0**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX G

2019 OFF-SITE TRANSFERS AND WASTE MANAGED ON-SITE BY CHEMICAL

CHEMICAL/FACILITY	OFF SITE TRANSFERS						ON SITE WASTE MANAGEMENT			
	POTW	RECYCLE	ENERGY RECOVERY	TREATMENT	DISPOSAL	TOTAL	RECYCLE	ENERGY RECOVERY	TREATMENT	TOTAL
Xylene (mixed isomers)										
BASF COLORS AND EFFECTS USA LLC	214	0	281	5	0	500	0	0	4,333	4,333
DELAWARE CITY REFINERY	0	57	0	1	9	67	0	0	214,283	214,283
DOVER AFB	0	0	0	0	0	0	0	0	0	0
ROGERS CORP	0	0	0	4,700	0	4,700	0	0	110,000	110,000
Xylene (mixed isomers) Total	**214**	**57**	**281**	**4,706**	**9**	**5,267**	**0**	**0**	**328,616**	**328,616**
Zinc Compounds										
ALLEN HARIM FARMS SEAFORD MILL	0	0	0	0	0	0	0	0	0	0
AMICK FARMS	0	0	0	0	0	0	0	0	0	0
MOUNTAIRE FARMS - FRANKFORD FEED MIL	0	0	0	0	0	0	0	0	0	0
MOUNTAIRE FARMS OF DELAWARE	0	1,976	0	0	82	2,058	0	0	0	0
PERDUE BRIDGEVILLE	0	0	0	0	0	0	0	0	0	0
V&S DELAWARE GALVANIZING	0	171,357	0	0	54,693	226,050	371,409	0	0	371,409
Zinc Compounds Total	**0**	**173,333**	**0**	**0**	**54,775**	**228,108**	**371,409**	**0**	**0**	**371,409**
STATE TOTALS	**835,843**	**5,922,986**	**902,596**	**288,272**	**214,772**	**8,164,469**	**10,280,608**	**11,693,251**	**363,654,274**	**385,628,133**

Source: DNREC 2019 TRI Database, October, 2020

All Amounts Are in Pounds

APPENDIX H

2019 ON-SITE RELEASE SUMMARY BY CHEMICAL

CHEMICAL - RANKED BY TOTAL ON-SITE RELEASE	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	TRANSFERS OFF-SITE	ON-SITE WASTE MGMT.
Nitrate Compounds	0	5,391,761	0	5,391,761	84,240	0
Hydrogen cyanide	129,759	202	0	129,961	0	207,115
Ammonia	122,042	2,187	760	124,989	706	11,321,418
Sulfuric acid	101,050	0	0	101,050	0	254,701
Methanol	38,353	0	0	38,353	1,086,473	4,132,376
Hydrogen Sulfide	28,375	366	0	28,741	0	343,402,445
n-Hexane	15,655	5	0	15,660	5	1,493,727
Styrene	11,173	5	0	11,178	5,424	35,399
Cyclohexane	10,906	5	0	10,911	48,519	10,417
Xylene (mixed isomers)	10,661	5	0	10,666	5,267	328,616
Toluene	8,640	5	0	8,645	268,460	242,638
Lead	9	3	5,069	5,080	1,441	1,878
Benzene	4,605	9	0	4,614	23	626,499
N,N-Dimethylformamide	4,499	0	0	4,499	420,153	4,991,547
Trichloroethylene	4,420	0	0	4,420	8,965	0
N-Methyl-2-pyrrolidone	4,008	0	0	4,008	205,794	13
Methyl methacrylate	3,795	0	0	3,795	183	0
Propylene	3,558	0	0	3,558	0	14,716
Ethylene	3,462	0	0	3,462	0	2,387
Nonylphenol	3,195	0	0	3,195	12,060	0
Ethylbenzene	2,391	5	0	2,396	1,021	74,195
Nickel Compounds	1,781	396	0	2,177	484,617	0
Naphthalene	1,780	5	0	1,785	854	11,641
Ethylene oxide	1,293	0	0	1,293	0	396
Carbon disulfide	1,271	0	0	1,271	0	2,656,738
Zinc Compounds	511	318	225	1,054	228,108	371,409
1,2,4-Trimethylbenzene	689	5	0	694	0	62,003
Hydrogen fluoride	544	0	0	544	0	96
Carbonyl sulfide	482	0	0	482	0	12,373,383
Lead Compounds	114	117	231	462	3,849,795	0
Hydrochloric acid	433	0	0	433	0	275,625
Boron trifluoride	365	0	0	365	0	71,154
Cresol (mixed isomers)	0	330	0	330	0	340,666
Cumene	324	5	0	329	0	3,656
Certain Glycol Ethers	2	317	0	319	5,070	0
Phenol	94	165	0	259	0	346,971
1,3-Butadiene	253	0	0	253	0	174
Polycyclic Aromatic Compounds	244	4	0	247	163	922
Propylene oxide	210	0	0	210	20	782
Copper Compounds	0	0	207	207	56,005	0
Peracetic acid	0	184	0	184	179	1,620,581
Cyanide Compounds	0	145	0	145	0	14,379
Mercury Compounds	104.8000	0.7500	22.4000	127.9500	7.4411	0.0000
n-Butyl alcohol	124	0	0	124	225,546	0
Aniline	100	0	0	100	15,595	310,031
Acetonitrile	93	0	0	93	19,787	0
Biphenyl	91	0	0	91	144,521	2,365
Creosote	7	0	40	47	946	0

Source: DNREC 2019 TRI Database, October, 2020 All amounts are in pounds

APPENDIX H

2019 ON-SITE RELEASE SUMMARY BY CHEMICAL

CHEMICAL - RANKED BY TOTAL ON-SITE RELEASE	ON-SITE RELEASES TO AIR	TO WATER	TO LAND	TOTAL	TRANSFERS OFF-SITE	ON-SITE WASTE MGMT.
Manganese Compounds	36	0	0	36	93,556	0
Chlorine	18	0	0	18	0	0
Molybdenum trioxide	14	0	0	14	16	0
Tetrachloroethylene	12	0	0	12	0	0
Copper	10	0	0	10	2,310	0
Phenanthrene	3	5	0	8	0	40
Acrylic acid	8	0	0	8	2,524	0
p-Chloroaniline	7	0	0	7	7,691	421
Anthracene	1	5	0	6	0	0
Benzo(g,h,i)perylene	1	5	0	5	0	452
Diisocyanates	5	0	0	5	24,448	0
Toluene diisocyanate (mixed isomers)	5	0	0	5	1,477	0
Diethanolamine	5	0	0	5	2,870	0
Nitrobenzene	2	0	0	2	0	0
Antimony Compounds	1	0	0	1	15,339	0
Mercury	0.6800	0.0000	0.0000	0.6800	61.9200	0.0000
4,4'-Methylenebis(2-chloroaniline)	1	0	0	1	1,286	0
Nickel	1	0	0	1	52,832	0
Hydrazine sulfate	0	0	0	0	0	0
Hydrazine	0	0	0	0	0	0
Dioxin and Dioxin-like Compounds	0.001288	0.000000	0.000000	0.001288	0.000000	0.001288
Manganese	0	0	0	0	3,773	0
Chlorodifluoromethane	0	0	0	0	0	0
Barium Compounds	0	0	0	0	0	0
Nonylphenol Ethoxylates	0	0	0	0	1,295	0
Chromium	0	0	0	0	255,311	0
Asbestos (friable)	0	0	0	0	141,915	0
Chromium Compounds	0	0	0	0	372,277	0
Selenium Compounds	0	0	0	0	0	0
Arsenic Compounds	0	0	0	0	604	0
Diphenylamine	0	0	0	0	0	0
Cobalt Compounds	0	0	0	0	4,736	0
Ethylene glycol	0	0	0	0	200	0
Nitric acid	0	0	0	0	0	24,162
STATE TOTALS	**521,593**	**5,396,564**	**6,555**	**5,924,712**	**8,164,469**	**385,628,133**

All amounts are in pounds

Source: DNREC 2019 TRI Database, October, 2020

APPENDIX I

2019 PBT RELEASE AND TRANSFER DETAIL

PBT CHEMICAL / FACILITY	ON-SITE RELEASES AIR	WATER	LAND	TOTAL	TRANSFERS OFF SITE	ON-SITE WASTE MGMT.
Benzo(g,h,i)perylene						
DELAWARE CITY REFINERY	0.44	4.57	0.00	5.01	0.00	452.00
EDGE MOOR/HAY ROAD ENERGY CENTERS	0.20	0.02	0.00	0.22	0.00	0.00
Benzo(g,h,i)perylene Total	**0.64**	**4.59**	**0.00**	**5.23**	**0.00**	**452.00**
Dioxin and Dioxin-like Compounds						
DELAWARE CITY REFINERY	0.001288	0.000000	0.000000	0.001288	0.000000	0.001288
Dioxin and Dioxin-like Compounds Total	**0.001288**	**0.000000**	**0.000000**	**0.001288**	**0.0000**	**0.001288**
Lead						
HMA HERITAGE CONCRETE BEAR	0.00	0.00	12.76	12.76	0.00	0.00
HMA HERITAGE CONCRETE CHESWOLD	0.00	0.00	3.79	3.79	0.00	0.00
HMA HERITAGE CONCRETE HEALD STREET	0.00	0.00	17.22	17.22	0.00	0.00
HMA HERITAGE CONCRETE MIDDLETOWN	0.00	0.00	7.86	7.86	0.00	0.00
NATIONAL GUARD TRAINING SITE RANGE	0.00	0.00	5,027.20	5,027.20	0.00	0.00
V&S DELAWARE GALVANIZING	8.20	3.00	0.00	11.20	1,434.40	1,878.00
W.L. GORE	0.30	0.00	0.00	0.30	6.70	0.00
Lead Total	**8.50**	**3.00**	**5,068.83**	**5,080.33**	**1,441.10**	**1,878.00**
Lead Compounds						
CLARIOS BATTERY PLANT	25.50	10.80	0.00	36.30	1,392,706.40	0.00
CLARIOS DISTRIBUTION CENTER	0.00	0.00	0.00	0.00	2,456,114.30	0.00
DELAWARE CITY REFINERY	83.00	106.50	0.00	189.50	674.74	0.00
INDIAN RIVER GENERATING STATION	5.00	0.00	231.30	236.30	0.00	0.00
OWEN STEEL COMPANY	0.00	0.00	0.00	0.00	300.00	0.00
VP RACING FUELS	0.00	0.00	0.00	0.00	0.00	0.00
Lead Compounds Total	**113.50**	**117.30**	**231.30**	**462.10**	**3,849,795.44**	**0.00**
Mercury						
DENTSPLY SIRONA MAIN PLANT	0.6800	0.0000	0.0000	0.6800	61.9200	0.0000
Mercury Total	**0.6800**	**0.0000**	**0.0000**	**0.6800**	**61.9200**	**0.0000**
Mercury Compounds						
DELAWARE CITY REFINERY	104.0000	0.7500	0.0000	104.7500	0.1625	0.0000
INDIAN RIVER GENERATING STATION	0.8000	0.0000	22.4000	23.2000	0.0000	0.0000
INTERVET INC	0.0000	0.0000	0.0000	0.0000	7.2786	0.0000
Mercury Compounds Total	**104.8000**	**0.7500**	**22.4000**	**127.9500**	**7.4411**	**0.0000**
Polycyclic Aromatic Compounds						
DELAWARE CITY REFINERY	237.04	3.76	0.00	240.80	0.00	372.00
EDGE MOOR/HAY ROAD ENERGY CENTERS	6.20	0.08	0.00	6.28	0.00	0.00
IKO	0.37	0.00	0.00	0.37	162.70	550.20
Polycyclic Aromatic Compounds Total	**243.61**	**3.84**	**0.00**	**247.45**	**162.70**	**922.20**
STATE PBT TOTALS	**471.74**	**129.48**	**5,322.53**	**5,923.75**	**3,851,468.61**	**3,252.20**

Source: DNREC TRI 2019 Database, October 2020.
All Amounts are in Pounds.

APPENDIX J

2019 CARCINOGEN RELEASE AND TRANSFER DETAIL

CARCINOGEN / FACILITY	TOTAL ON-SITE RELEASES AIR	WATER	LAND	TOTAL	TRANSFERS OFF SITE	ON-SITE WASTE MGMT.
1,3-Butadiene						
DELAWARE CITY REFINERY	253.00	0.00	0.00	253.00	0.00	174.00
1,3-Butadiene Total	**253.00**	**0.00**	**0.00**	**253.00**	**0.00**	**174.00**
4,4'-Methylenebis(2-chloroaniline)						
ROHM & HAAS B5 B6	0.51	0.00	0.00	0.51	1,083.00	0.00
ROHM & HAAS B7 B15	0.04	0.00	0.00	0.04	203.00	0.00
4,4'-Methylenebis(2-chloroaniline) Total	**0.55**	**0.00**	**0.00**	**0.55**	**1,286.00**	**0.00**
Arsenic Compounds						
CLARIOS DISTRIBUTION CENTER	0.00	0.00	0.00	0.00	603.50	0.00
Arsenic Compounds Total	**0.00**	**0.00**	**0.00**	**0.00**	**603.50**	**0.00**
Asbestos (friable)						
DELAWARE CITY REFINERY	0.00	0.00	0.00	0.00	141,915.00	0.00
Asbestos (friable) Total	**0.00**	**0.00**	**0.00**	**0.00**	**141,915.00**	**0.00**
Benzene						
DELAWARE CITY REFINERY	4,605.00	9.03	0.00	4,614.03	22.59	626,499.00
Benzene Total	**4,605.00**	**9.03**	**0.00**	**4,614.03**	**22.59**	**626,499.00**
Chromium Compounds						
BALTIMORE AIRCOIL COMPANY	0.00	0.00	0.00	0.00	372,277.09	0.00
PERDUE BRIDGEVILLE	0.00	0.00	0.00	0.00	0.00	0.00
Chromium Compounds Total	**0.00**	**0.00**	**0.00**	**0.00**	**372,277.09**	**0.00**
Cobalt Compounds						
BALTIMORE AIRCOIL COMPANY	0.00	0.00	0.00	0.00	4,735.71	0.00
Cobalt Compounds Total	**0.00**	**0.00**	**0.00**	**0.00**	**4,735.71**	**0.00**
Creosote						
DELAWARE CITY REFINERY	7.00	0.00	40.00	47.00	946.00	0.00
Creosote Total	**7.00**	**0.00**	**40.00**	**47.00**	**946.00**	**0.00**
Cumene						
DELAWARE CITY REFINERY	282.00	5.00	0.00	287.00	0.00	3,656.00
DOVER AFB	42.00	0.00	0.00	42.00	0.00	0.00
Cumene Total	**324.00**	**5.00**	**0.00**	**329.00**	**0.00**	**3,656.00**
Ethylbenzene						
DELAWARE CITY REFINERY	1,849.00	5.00	0.00	1,854.00	21.26	53,195.00
DOVER AFB	42.00	0.00	0.00	42.00	0.00	0.00
ROGERS CORP	500.00	0.00	0.00	500.00	1,000.00	21,000.00
Ethylbenzene Total	**2,391.00**	**5.00**	**0.00**	**2,396.00**	**1,021.26**	**74,195.00**
Ethylene oxide						
CRODA	1,293.30	0.00	0.00	1,293.30	0.00	396.00
Ethylene oxide Total	**1,293.30**	**0.00**	**0.00**	**1,293.30**	**0.00**	**396.00**
Hydrazine						
VEOLIA - RED LION PLANT	0.03	0.00	0.00	0.03	0.00	0.00
Hydrazine Total	**0.03**	**0.00**	**0.00**	**0.03**	**0.00**	**0.00**
Hydrazine sulfate						
VEOLIA - RED LION PLANT	0.12	0.00	0.00	0.12	0.00	0.00
Hydrazine sulfate Total	**0.12**	**0.00**	**0.00**	**0.12**	**0.00**	**0.00**
Lead						
HMA HERITAGE CONCRETE BEAR	0.00	0.00	12.76	12.76	0.00	0.00
HMA HERITAGE CONCRETE CHESWOLD	0.00	0.00	3.79	3.79	0.00	0.00
HMA HERITAGE CONCRETE HEALD STREET	0.00	0.00	17.22	17.22	0.00	0.00
HMA HERITAGE CONCRETE MIDDLETOWN	0.00	0.00	7.86	7.86	0.00	0.00
NATIONAL GUARD TRAINING SITE RANGE	0.00	0.00	5,027.20	5,027.20	0.00	0.00
V&S DELAWARE GALVANIZING	8.20	3.00	0.00	11.20	1,434.40	1,878.00
W.L. GORE	0.30	0.00	0.00	0.30	6.70	0.00
Lead Total	**8.50**	**3.00**	**5,068.83**	**5,080.33**	**1,441.10**	**1,878.00**
Lead Compounds						
CLARIOS BATTERY PLANT	25.50	10.80	0.00	36.30	1,392,706.40	0.00
CLARIOS DISTRIBUTION CENTER	0.00	0.00	0.00	0.00	2,456,114.30	0.00
DELAWARE CITY REFINERY	83.00	106.50	0.00	189.50	674.74	0.00
INDIAN RIVER GENERATING STATION	5.00	0.00	231.30	236.30	0.00	0.00
OWEN STEEL COMPANY	0.00	0.00	0.00	0.00	300.00	0.00
VP RACING FUELS	0.00	0.00	0.00	0.00	0.00	0.00
Lead Compounds Total	**113.50**	**117.30**	**231.30**	**462.10**	**3,849,795.44**	**0.00**

Source: DNREC 2019 TRI Database, October 2020
All amounts are in pounds

APPENDIX J

2019 CARCINOGEN RELEASE AND TRANSFER DETAIL

CARCINOGEN / FACILITY	TOTAL ON-SITE RELEASES AIR	WATER	LAND	TOTAL	TRANSFERS OFF SITE	ON-SITE WASTE MGMT.
Molybdenum trioxide						
DELAWARE CITY REFINERY	14.00	0.00	0.00	14.00	16.32	0.00
Molybdenum trioxide Total	**14.00**	**0.00**	**0.00**	**14.00**	**16.32**	**0.00**
N,N-Dimethylformamide						
AIR LIQUIDE ADVANCED SEPARATIONS	31.00	0.00	0.00	31.00	24,150.00	0.00
ROHM & HAAS B2 B3 B8	4,468.00	0.00	0.00	4,468.00	396,003.00	4,991,547.00
N,N-Dimethylformamide Total	**4,499.00**	**0.00**	**0.00**	**4,499.00**	**420,153.00**	**4,991,547.00**
Naphthalene						
CRODA	1.20	0.00	0.00	1.20	853.50	0.00
DELAWARE CITY REFINERY	1,737.00	5.00	0.00	1,742.00	0.06	11,641.00
DOVER AFB	42.00	0.00	0.00	42.00	0.00	0.00
EDGE MOOR/HAY ROAD ENERGY CENTERS	0.00	0.00	0.00	0.00	0.00	0.00
Naphthalene Total	**1,780.20**	**5.00**	**0.00**	**1,785.20**	**853.56**	**11,641.00**
Nickel						
DUHADAWAY TOOL & DIE SHOP INC	0.00	0.00	0.00	0.00	8,482.00	0.00
HANDYTUBE	0.00	0.00	0.00	0.00	43,311.00	0.00
METAL MASTERS	0.50	0.00	0.00	0.50	1,039.00	0.00
Nickel Total	**0.50**	**0.00**	**0.00**	**0.50**	**52,832.00**	**0.00**
Nickel Compounds						
BALTIMORE AIRCOIL COMPANY	0.00	0.00	0.00	0.00	477,076.95	0.00
DELAWARE CITY REFINERY	1,780.49	395.97	0.00	2,176.46	39.72	0.00
OWEN STEEL COMPANY	0.70	0.00	0.00	0.70	7,500.00	0.00
PRINCE MINERALS LLC	0.00	0.00	0.00	0.00	0.00	0.00
Nickel Compounds Total	**1,781.19**	**395.97**	**0.00**	**2,177.16**	**484,616.67**	**0.00**
Nitrobenzene						
ORIENT CORP	2.00	0.00	0.00	2.00	0.00	0.00
Nitrobenzene Total	**2.00**	**0.00**	**0.00**	**2.00**	**0.00**	**0.00**
p-Chloroaniline						
BASF COLORS AND EFFECTS USA LLC	7.00	0.00	0.00	7.00	7,691.00	421.00
p-Chloroaniline Total	**7.00**	**0.00**	**0.00**	**7.00**	**7,691.00**	**421.00**
Polycyclic Aromatic Compounds						
DELAWARE CITY REFINERY	237.04	3.76	0.00	240.80	0.00	372.00
EDGE MOOR/HAY ROAD ENERGY CENTERS	6.20	0.08	0.00	6.28	0.00	0.00
IKO	0.37	0.00	0.00	0.37	162.70	550.20
Polycyclic Aromatic Compounds Total	**243.61**	**3.84**	**0.00**	**247.45**	**162.70**	**922.20**
Propylene oxide						
CRODA	209.70	0.00	0.00	209.70	20.00	781.80
Propylene oxide Total	**209.70**	**0.00**	**0.00**	**209.70**	**20.00**	**781.80**
Styrene						
DELAWARE CITY REFINERY	6.83	5.00	0.00	11.83	17.94	1,127.00
JUSTIN TANKS	11,166.00	0.00	0.00	11,166.00	5,406.00	34,272.00
Styrene Total	**11,172.83**	**5.00**	**0.00**	**11,177.83**	**5,423.94**	**35,399.00**
Tetrachloroethylene						
DELAWARE CITY REFINERY	11.70	0.00	0.00	11.70	0.00	0.00
Tetrachloroethylene Total	**11.70**	**0.00**	**0.00**	**11.70**	**0.00**	**0.00**
Toluene diisocyanate (mixed isomers)						
AEARO TECHNOLOGIES LLC	5.00	0.00	0.00	5.00	1,477.00	0.00
Toluene diisocyanate (mixed isomers) Total	**5.00**	**0.00**	**0.00**	**5.00**	**1,477.00**	**0.00**
Trichloroethylene						
HANDYTUBE	4,420.00	0.00	0.00	4,420.00	8,965.00	0.00
Trichloroethylene Total	**4,420.00**	**0.00**	**0.00**	**4,420.00**	**8,965.00**	**0.00**
STATE TOTAL	**33,143**	**549**	**5,340**	**39,032**	**5,356,255**	**5,747,510**

Source: DNREC 2019 TRI Database, October 2020
All amounts are in pounds

Sample Form R
For Reporting year 2019

Form Approved OMB Number: 2025-0009
Approval Expires: 10/31/2021 **Page 1 of 6**

EPA United States Environmental Protection Agency

FORM R

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also Known as Title III of the Superfund Amendments and Reauthorization Act

TRI Facility ID Number

Toxic Chemical, Category, or Generic Name

Complete form online via TRI-MEweb. For a trade secret submission, send completed forms to TRI Reporting Center, P. O. Box 10163, Fairfax, VA 22038. The annual public burden related to the Form R is estimated to average 35.71 hours per response for a facility filing a report on one chemical. See the Reporting Forms and Instructions for more information on submissions and the Paperwork Reduction Act.

This section only applies if you are revising or withdrawing a previously submitted form, otherwise leave blank.	**Revision (Enter up to two code(s))**	**Withdrawal (Enter up to two code(s))**
	☐ ☐	☐ ☐

IMPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR _____

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 as a trade secret? ☐ Yes (Answer question 2.2; attach substantiation forms) ☐ No (Do not answer 2.2; go to Section 3)	2.2	Is this copy ☐ Sanitized ☐ Unsanitized (Answer only if "Yes" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report.

Name and official title of owner/operator or senior management official:	Signature:	Date signed:

SECTION 4. FACILITY IDENTIFICATION

4.1	Facility or Establishment Name	TRI Facility ID Number	BIA Code			
	Physical Street Address	Mailing Address (if different from physical street address)				
	City/County/State/ZIP Code	City/State/ZIP Code	Country (Non-US)			
4.2	This report contains information for: (Important: Check a or b; check c or d if applicable)	a. ☐ An entire facility	b. ☐ Part of a facility	c. ☐ A federal facility	d. ☐ GOCO	
4.3	Technical Contact Name	Telephone Number (include area code and ext.)				
	Email Address					
4.4	Public Contact Name	Telephone Number (include area code and ext.)				
	Email Address					
4.5	NAICS Code(s) (6 digits)	Primary a.	b.	c.	d.	e. f.
4.6	Dun & Bradstreet Number(s) (9 digits)	a.				
		b.				

SECTION 5. Parent Company Information

5.1	Name of U.S. Parent Company (for TRI Reporting purposes)		No U.S. Parent Company (for TRI Reporting purposes) ☐
5.2	Parent Company's Dun & Bradstreet Number	NA ☐	

EPA Form 9350 -1 (Rev. 10/2018). Previous editions are obsolete.

DO NOT SUBMIT TO EPA

Sample Form R
For Reporting year 2019

Form Approved OMB Number: 2025-0009
Approval Expires: 10/31/2021 **Page 2 of 6**

FORM R Part II. CHEMICAL-SPECIFIC INFORMATION	TRI Facility ID Number
	Toxic Chemical, Category, or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY
(Important: DO NOT complete this section if you are reporting a mixture component in Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part I, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY **(Important: DO NOT complete this section if you completed Section 1.)**

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import If Produce or Import c. ☐ For on-site use/processing d. ☐ For sale/distribution e. ☐ As a byproduct f. ☐ As an impurity	a. ☐ As a reactant b. ☐ As a formulation component c. ☐ As an article component d. ☐ Repackaging e. ☐ As an impurity f. ☐ Recycling ☐ ☐ ☐ ☐ ☐ Enter 4-digit code(s) from instruction package	a. ☐ As a chemical processing aid b. ☐ As a manufacturing aid c. ☐ Ancillary or other use ☐ ☐ ☐ ☐ Enter 4-digit code(s) from instruction package

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ON-SITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE

			A. Total Release (pounds/year*) (Enter a range code*** or estimate)	B. Basis of Estimate (Enter code)	C. Percent from Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (Enter one name per box)	NA ☐			
	Stream or Water Body Name	Reach Code (optional)			
5.3.1					
5.3.2					

If additional pages of Part II, Section 3.2 and 3.3 are attached, indicate the total number of pages in this box ☐
and indicate the Part II, Section 3.2 and 3.3 page number in this box. ☐ (Example: 1, 2, 3, etc.)
If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box ☐
and indicate the Part II, Section 5.3 page number in this box. ☐ (Example: 1, 2, 3, etc.)

EPA form 9350 -1 (Rev. 10/2018). Previous editions are obsolete.

*For Dioxin or Dioxin-like compounds, report in grams/year.
***Range Codes: A= 1-10 pounds; B= 11-499 pounds; C= 500-999 pounds.

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Sample Form R
For Reporting year 2019

Form Approved OMB Number: 2025-0009
Approval Expires: 10/31/2021 **Page 3 of 6**

FORM R Part II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number Toxic Chemical, Category, or Generic Name

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE (continued)

		NA	A. Total Release (pounds/year*) (Enter a range code*** or estimate)	B. Basis of Estimate (Enter code)
5.4-5.5	Disposal to land on-site			
5.4.1	Class I Underground Injection Wells	☐		
5.4.2	Class II-V Underground Injection Wells	☐		
5.5.1A	RCRA Subtitle C landfills	☐		
5.5.1B	Other landfills	☐		
5.5.2	Land treatment/application farming	☐		
5.5.3A	RCRA Subtitle C surface impoundments	☐		
5.5.3B	Other surface impoundments	☐		
5.5.4	Other disposal	☐		

Optional Waste Rock Piles Information
You may check this box if your Section 5.5 quantities include "waste rock piles." ☐ Enter quantity of "waste rock piles" (pounds/year*)

SECTION 6. TRANSFER(S) OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs) NA ☐

6.1.___ POTW Name

POTW Address

City | County | State | ZIP

A. Quantity Transferred to this POTW (pounds/year*) (Enter range code***or estimate)	B. Basis of Estimate (Enter code)	C. Disposal/Treatment (Enter code)
1.	1.	1. P
2.	2.	2. P
3.	3.	3. P

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box ☐
and indicate the Part II, Section 6.1 page number in this box. ☐ (Example: 1, 2, 3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS NA ☐

6.2.___ Off-Site EPA Identification Number (RCRA ID No.)

Off-Site Location Name:

Off-Site Address:

City | County | State | ZIP | Country (non-US)

Is this location under control of reporting facility or parent company? ☐ Yes ☐ No

EPA form 9350 -1 (Rev. 10/2018). Previous editions are obsolete.

*For Dioxin or Dioxin-like compounds, report in grams/year.
***Range Codes: A= 1-10 pounds; B= 11-499 pounds; C= 500-999 pounds.

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TOXICS RELEASE INVENTORY

Sample Form R
For Reporting year 2019

Form Approved OMB Number: 2025-0009
Approval Expires: 10/31/2021 **Page 4 of 6**

FORM R **Part II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)**	TRI Facility ID Number Toxic Chemical, Category, or Generic Name

SECTION 6.2. TRANSFERS TO OTHER OFF-SITE LOCATION (CONTINUED)

A. Total Transfer (pounds/year*) (Enter a range code*** or estimate)	**B. Basis of Estimate** (Enter code)	**C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery** (Enter code)
1.	**1.**	**1. M**
2.	**2.**	**2. M**
3.	**3.**	**3. M**

6.2____ Off-Site EPA Identification Number (RCRA ID No.)

Off-Site Location Name:

Off-Site Address:

City		County		State		ZIP		Country (non-US)	

Is this location under control of reporting facility or parent company? ☐ Yes ☐ No

A. Total Transfer (pounds/year*) (Enter a range code*** or estimate)	**B. Basis of Estimate** (Enter code)	**C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery** (Enter code)
1.	**1.**	**1. M**
2.	**2.**	**2. M**
3.	**3.**	**3. M**

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment method is applied to any waste stream containing the toxic chemical or chemical category.

a. General Waste Stream (Enter code)	b. Waste Treatment Method(s) Sequence (Enter 3- or 4-character code(s))						c. Waste Treatment Efficiency (Enter 2 character code)
7A.1a	**7A.1b**		1		2		**7A.1c**
	3		4		5		
	6		7		8		
7A.2a	**7A.2b**		1		2		**7A.2c**
	3		4		5		
	6		7		8		
7A.3a	**7A.3b**		1		2		**7A.3c**
	3		4		5		
	6		7		8		
7A.4a	**7A.4b**		1		2		**7A.4c**
	3		4		5		
	6		7		8		
7A.5a	**7A.5b**		1		2		**7A.5c**
	3		4		5		
	6		7		8		

If additional pages of Part II, Section 6.2/7.A are attached, indicate the total number of pages in this ☐ box and indicate the Part II, Section 6.2/7.A page number in this box. ☐ (Example: 1, 2, 3, etc.)

EPA form 9350 -1 (Rev. 10/2018). Previous editions are obsolete.

*For Dioxin or Dioxin-like compounds, report in grams/year.
***Range Codes: A= 1-10 pounds; B= 11-499 pounds; C= 500-999 pounds.

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Sample Form R
For Reporting year 2019

Form Approved OMB Number: 2025-0009
Approval Expires: 10/31/2021 **Page 5 of 6**

FORM R

Part II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number

Toxic Chemical, Category, or Generic Name

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

☐ NA Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category.

Energy Recovery Methods (Enter 3-character code(s))

1 ☐ 2 ☐ 3 ☐

SECTION 7C. ON-SITE RECYLING PROCESSES

☐ NA Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods (Enter 3-character code(s))

1. ☐ 2. ☐ 3. ☐

SECTION 8. SOURCE REDUCTION AND WASTE MANAGEMENT

		Column A Prior Year (pounds/year*)	Column B Current Reporting Year (pounds/year*)	Column C Following Year (pounds/year*)	Column D Second Following Year (pounds/year*)
8.1 – 8.7 Production-Related Waste Managed					
8.1a	Total on-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills				
8.1b	Total other on-site disposal or other releases				
8.1c	Total off-site disposal to Class I Underground Injection Wells, RCRA Subtitle C landfills, and other landfills				
8.1d	Total other off-site disposal or other releases				
8.2	Quantity used for energy recovery on-site				
8.3	Quantity used for energy recovery off-site				
8.4	Quantity recycled on-site				
8.5	Quantity recycled off-site				
8.6	Quantity treated on-site				
8.7	Quantity treated off-site				
8.8	Non-Production-Related Waste Managed***				
8.9	☐ Production ratio or ☐ Activity ratio (select one and enter value to the right)				
8.10	Did your facility engage in any newly implemented source reduction activities for this chemical during the reporting year? If so, complete the following section; if not, check NA. **NA** ☐				

	Source Reduction Activities (Enter code(s))	Methods to Identify Activity (Enter code(s))			Estimated annual reduction (Enter code(s)) (optional)
8.10.1		**a.**	**b.**	**c.**	**d.**
8.10.2		**a.**	**b.**	**c.**	**d.**
8.10.3		**a.**	**b.**	**c.**	**d.**
8.10.4		**a.**	**b.**	**c.**	**d.**

EPA form 9350 -1 (Rev. 10/2018). Previous editions are obsolete.

*For Dioxin or Dioxin-like compounds, report in grams/year.

***Includes quantities released to the environment or transferred off-site as a result of remedial actions, catastrophic events, or other one-time events not associated with production processes

DO NOT SUBMIT TO EPA

Sample Form R
For Reporting year 2019

Form Approved OMB Number: 2025-0009
Approval Expires: 10/31/2021

FORM R Part II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)	TRI Facility ID Number Toxic Chemical, Category, or Generic Name

SECTION 8.11. DISPOSAL OR OTHER RELEASES, SOURCE REDUCTION, AND RECYCLING ACTIVITIES

8.11	If you wish to submit additional optional information on source reduction, recycling, or pollution control activities, provide it here.

SECTION 9. MISCELLANEOUS INFORMATION

9.1	If you wish to submit any miscellaneous, additional, or optional information regarding your Form R submission, provide it here.

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EPA form 9350 -1 (Rev. 10/2018). Previous editions are obsolete.

Sample Form A Page 1
For Reporting year 2019

Form Approved OMB Number: 2025-0009
Approval Expires: 10/31/2021

Page 1 of 2

EPA United States Environmental Protection Agency

TOXICS RELEASE INVENTORY FORM A

Complete form online via TRI-MEweb. For a trade secret submission, send completed forms to TRI Reporting Center, P. O. Box 10163, Fairfax, VA 22038. The annual public burden related to the Form A is estimated to average 21.96 hours per response for a facility filing a report on one chemical. See the Reporting Forms and Instructions for more information on submissions and the Paperwork Reduction Act.

TRI Facility ID Number

This section only applies if you are revising or withdrawing a previously submitted form, otherwise leave blank.

Revision (Enter up to two code(s)) ☐ ☐

Withdrawal (Enter up to two code(s)) ☐ ☐

IMPORTANT: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR _____

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 as a trade secret? ☐ Yes (Answer question 2.2; attach substantiation forms) ☐ No (Do not answer 2.2; go to Section 3)	2.2	Is this copy ☐ Sanitized ☐ Unsanitized (Answer only if "Yes" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that to the best of my knowledge and belief, for each toxic chemical listed in this statement, the annual reportable amount as defined in 40 CFR 372.27(a), did not exceed 500 pounds for this reporting year and that the chemical was manufactured, processed, or otherwise used in an amount not exceeding 1 million pounds during this reporting year.

Name and official title of owner/operator or senior management official:	Signature:	Date signed:

SECTION 4. FACILITY IDENTIFICATION

4.1	Facility or Establishment Name	TRI Facility ID Number	BIA Code
	Physical Street Address	Mailing Address (if different from physical street address)	
	City/County/State/ZIP Code	City/State/ZIP Code	Country (Non-US)
4.2	This report contains information for: (Important: Check c or d if applicable)	c. ☐ A Federal Facility	d. ☐ GOCO
4.3	Technical Contact Name		Telephone Number (include area code and ext.)
	Email Address		
4.4	Public Contact Name		Telephone Number (include area code and ext.)
	Email Address		
4.5	NAICS Code(s) (6 digits)	Primary a. / b. / c. / d. / e. / f.	
4.6	Dun & Bradstreet Number(s) (9 digits)	a. / b.	

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of U.S. Parent Company (for TRI Reporting purposes)		No U.S. Parent Company (for TRI Reporting purposes) ☐
5.2	Parent Company's Dun & Bradstreet Number	NA ☐	

DO NOT SUBMIT TO EPA

EPA Form 9350 -2 (Rev. 10/2018). Previous editions are obsolete.

Sample Form A Page 2
For Reporting year 2019

Form Approved OMB Number: 2025-009
Approval Expires: 10/31/2021

Page 2 of 2

EPA FORM A PART II. CHEMICAL IDENTIFICATION Do not use this form for reporting PBT chemicals, including Dioxin and Dioxin-like Compounds**	TRI Facility ID Number

SECTION 1. TOXIC CHEMICAL IDENTITY	**Report____of ____**
1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "Yes". Generic Name must be structurally descriptive.)
SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above)	
2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)
SECTION 9.2. OPTIONAL POLLUTION PREVENTION AND ADDITIONAL INFORMATION FOR THIS TOXIC CHEMICAL	
9.2	If you wish to provide optional chemical specific pollution prevention or additional information, provide it here.

SECTION 1. TOXIC CHEMICAL IDENTITY	**Report____of ____**
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9.2	If you wish to provide optional chemical specific pollution prevention or additional information, provide it here.

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**See the TRI Reporting Forms and Instructions manual for the list of PBT Chemicals (including Dioxin and Dioxin-like Compounds)

EPA Form 9350 -2 (Rev. 10/2018). Previous editions are obsolete.

(Make additional copies of this page, if needed)

Form Approved OMB Number: 2025-0009
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EPA United States

TRI Facility ID Number

FORM R Schedule 1

PART II. CHEMICAL-SPECIFIC INFORMATION (continued)

SECTION 5. QUANTITY OF DIOXIN AND DIOXIN-LIKE COMPOUNDS ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE

	5.1	NA		5.2	NA		5.3	Discharges to receiving streams or water bodies (Enter data for one stream or water body per box)	NA	
	Fugitive or non-point air emissions			Stack or point air emissions			5.3.1	5.3.2	5.3.3	
D. Mass (grams) of each compound in the category (1-17)										
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										

If additional pages of Section 5.3 are attached, indicate the total number of pages in this box ☐
and indicate the Section 5.3 page number in this box (Example: 1, 2, 3, etc.) ☐

See the Reporting Forms and Instructions for information on submissions and the Paperwork Reduction Act.

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FORM R Schedule 1
PART II. CHEMICAL-SPECIFIC INFORMATION (continued)

TRI Facility ID Number

SECTION 5. QUANTITY OF DIOXIN AND DIOXIN-LIKE COMPOUNDS ENTERING EACH ENVIRONMENTAL MEDIUM ON-SITE

		5.4 – 5.5 Disposal to land on-site							
		5.4.1 NA ☐ Class I Underground Injection Wells	5.4.2 NA ☐ Class II-V Underground Injection Wells	5.5.1.A NA ☐ RCRA Subtitle C landfills	5.5.1.B NA ☐ Other landfills	5.5.2 NA ☐ Land treatment/ application farming	5.5.3.A NA ☐ RCRA Subtitle C surface impoundments	5.5.3.B NA ☐ Other surface impoundments	5.5.4 NA ☐ Other disposal
C. Mass (grams) of each compound in the category (1-17)	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								

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FORM R Schedule 1
PART II. CHEMICAL-SPECIFIC INFORMATION (continued)

TRI Facility ID Number

SECTION 6. TRANSFERS OF DIOXIN AND DIOXIN-LIKE COMPOUNDS IN WASTES TO OFF-SITE LOCATIONS

6.1. DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs) NA ☐

6.1 ___	D. Mass (grams) of Each Compound in the Category (1-17)								
1.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
2.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
3.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	

6.1 ___	D. Mass (grams) of Each Compound in the Category (1-17)								
1.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
2.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
3.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	

6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS NA ☐

6.2 ___	D. Mass (grams) of Each Compound in the Category (1-17)								
1.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
2.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
3.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	

6.2 ___	D. Mass (grams) of Each Compound in the Category (1-17)								
1.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
2.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	
3.	1	2	3	4	5	6	7	8	
9	10	11	12	13	14	15	16	17	

If additional pages of Section 6.1 or 6.2 are attached, indicate the total number of pages in this box ☐

and indicate the Section 6.1 or 6.2 page number in this box ☐ **(Example: 1, 2, 3, etc.)**

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FORM R Schedule 1
PART II. CHEMICAL-SPECIFIC INFORMATION (continued)

TRI Facility ID Number

SECTIONS 8.1-8.8. WASTE MANAGEMENT QUANTITIES FOR DIOXIN AND DIOXIN-LIKE COMPOUNDS (current year only)

Column f. Mass (grams) of each compound in the category (1-17)	8.1-8.7 Production-related waste managed										
	8.1a Total on-site disposal to Class 1 Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	8.1b Total other on-site disposal or other releases	8.1c Total off-site disposal to Class 1 Underground Injection Wells, RCRA Subtitle C landfills, and other landfills	8.1d Total other off-site disposal or other releases	8.2 Quantity used for energy recovery on-site	8.3 Quantity used for energy recovery off-site	8.4 Quantity recycled on-site	8.5 Quantity recycled off-site	8.6 Quantity treated on-site	8.7 Quantity treated off-site	8.8 Non-production related waste managed*
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											

*Includes quantities released to the environment or transferred off-site as a result of remedial actions, catastrophic events, or other one-time events not associated with production processes.

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EPCRA Reporting Program
Emergency Response and Strategic Services Section, DNREC
155 Commerce Way, Suite B
Dover, DE 19904
(302) 739-9405

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and the diversity of its workforce.